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JANUARY 1950

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AMATEUR RADIO

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EDITORIAL

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EMERGENCY NETWORKS

EMERGENCY—What does it mean? "A pressing necessity" is one of its meanings which is applicable to Amateur Radio in all times of a National or State crisis.

As this Editorial is being written the first day of summer has past and with it fast approaches one of this country's greatest and costliest of all crises —BUSHFIRES.

To help one of the noblest volunteer services rendered mankind—the Bush Fire Brigades—the Wireless Institute of Australia, through its various Divisions, has formed Emergency Networks which have been already in successful operation in other spheres of activity, viz.: rescue work in locating missing persons and more recently the N.S.W. floods—and have received recognition of their worth. This has been due mainly to the efforts of "the few."

No organisation can render a truly worthwhile effort if it is understaffed, therefore, we appeal to each and every Amateur to give serious consideration to putting his "voice and fist" into this phase of the Amateur Service. You may be one of the boys who will be going portable at this time of the year, or a potential participant in the National Field Day on the 30th of this month, your gear, therefore, will be prepared and in readiness. So why not enrol in your Division's network? Exercises, in the main, are conducted at week-ends on the special frequencies of 3501 Kc. and 7002 Kc. and will not entail much of your time.

From amongst the proud owners of the many and varied types of the small transceivers and the like, procured from disposals sources, it is felt that there is still quite a large number who have not as yet experienced the thrill of portable working. If you are one of these let your Divisional Emergency Network Co-ordinator have your application for membership immediately and join the ranks of those Amateurs whose motto could be "We Serve," whilst to the others we say, "Be Prepared" to assist in some small way—even by home operation.

The Contents . . .

Homecrafts PTY. LTD.

NEW YEAR RADIO BARGAINS

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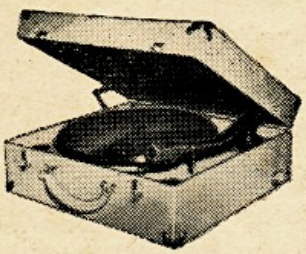

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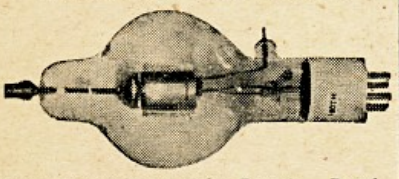

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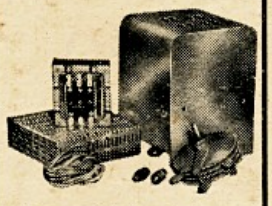

Homecrafts' 6 volt 4 amp. Battery Charger Kit includes 6 volt 4 amp. English Selenium Rectifier, transformer, black crackle finish metal case, 2 terminals and hook-up wire. Complete kit, as illustrated only **£4/10/-.**

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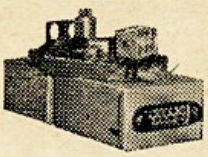

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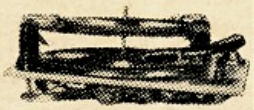

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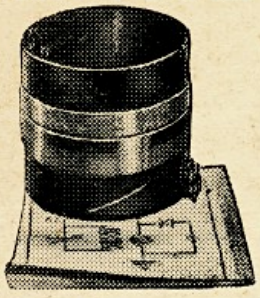

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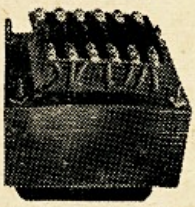

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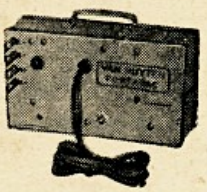

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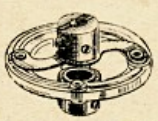

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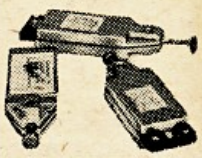

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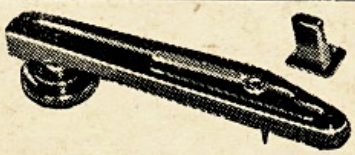

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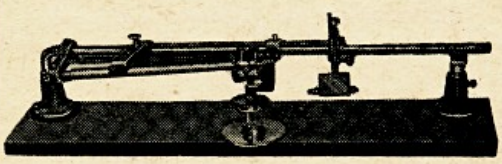

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A De Luxe Vacuum-Tube Voltmeter

Part I.—New Methods for Increasing Utility and Dependability

For some years past the vacuum-tube voltmeter has appeared to offer greatest promise in ever-demanding-to-be-improved voltage-measurement technique for d.c. as well as for a.c. up into the u.h.f. region. The use of vacuum tubes as coupling agents between frequency-sensitive or load-sensitive voltage sources and conventional power consuming meters seems to be the simplest means of preventing the power requirements of conventional indicating meters from deleteriously loading delicate circuits.

Reduced to its simplest expression, a vacuum-tube voltmeter is nothing more than a device applied to a direct current milliammeter (usually of D'Arsonval type) to raise the quite-low input resistance of the meter itself up into the multimegohm range in order that the whole meter shall affect the circuit behaviour as little as possible when applied to a source of voltage to be measured. In d.c. measurements it is obvious that the higher the voltmeter input resistance may be, the more desirable the instrument.

The same criterion of excellence applies in measurements of a.c. voltages, but here the problem additionally necessitates the insertion between source and meter of a rectifier to translate applied a.c. into d.c. to actuate the meter movement. The usual practice of employing a copper-oxide rectifier satisfies only the basic requirement of low frequency a.c. voltage measurement, for it limits undesirably both the input resistance and frequency range. It is to be noted that many commercial "vacuum-tube voltmeters" have been such only partially, since their designers resorted to the undesirable expedient of copper-oxide rectifiers for a.c. operation.

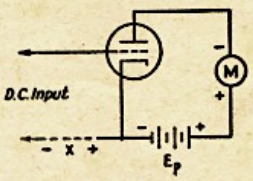


Fig. 1.
Basic vacuum-tube voltmeter circuit.

It is felt that an instrument deserving the name of vacuum-tube voltmeter should be "vacuum-tube" completely in all voltage measurements, a.c. as well as d.c., since the public automatically associates with the term the full merit of **complete** vacuum-tube operation for all measurements.

DESIGN PROBLEMS

The author begs indulgence for the preceding statement of facts, undoubtedly obvious to most readers, upon the ground that a definite and clear premise is essential to comprehension of any problem—and a problem he has most certainly found in the true vacuum-tube voltmeter. His own interest has stemmed from that experience, usual to serious investigators, of finding most available reasonably priced vacuum-tube voltmeters unsuitable for quantitive, precision work. Faced with the need for a vacuum-tube voltmeter departing negligibly from the dependability and accuracy of the basic indicating meter itself, he found himself forced to continual compromise. So acute became the dissatisfaction developed over recent years in his direction of design, development and production of military projects, using any but the most expensive laboratory vacuum-tube voltmeters of decidedly limited utility, that he set himself to the task of simultaneously taming the v.t.v.m., reducing its cost and expanding its sphere of utility.

Over a period of some years the writer has built quite a few different designs of vacuum-tube voltmeters.

Each one was eventually pulled down and re-built into a so-called "improved design," with varying degrees of success. It was felt that the annoyances of grid, "gas" current, and non-linearity could be overcome, and eventually the writer read the article by McMurdo Silver in July 1945 "QST," entitled "Taming the Vacuum-Tube Voltmeter." This description of the failings inherent in the design of v.t.v.m's. and the eventual development of an instrument to overcome these failings made absorbing reading and ranks, to the writer's mind, as one of the best written technical articles to be seen in a radio journal.

It was resolved that when things became more normal after the war, and low tolerance resistances and ceramic switches became available, an instrument embodying the teachings of this article be built up. This has now been done, and it is felt that its operation is so far superior to previous vacuum-tube voltmeters, both home-built and commercial, of the writer's experience, that Amateurs and those whose profession is radio servicing would find the theory and constructional data of value, so presented herewith is the theoretical development of the design, which will be followed next month by a practical description of two instruments of different mechanical construction, but built to the same circuit.

It was necessary to change the diode types and also the values of the resistance range "stick" slightly to enable valves and resistances readily available in Australia to be used. However these modifications will be discussed at length in the second part of the article.

—J. Duncan, Technical Editor.

It is hoped that a brief review of some of the problems involved, the individual solutions and, finally, the combination of these individual solutions into an instrument of wide utility and extra ordinary dependability will be of interest to prospective constructors.

As stated, the basic concept of the vacuum-tube voltmeter is the employment of a vacuum tube between the voltage to be measured and a suitable indicating meter. The triode possesses the advantage of being able to translate a change in grid voltage into a change in plate current; in other words it is a voltage-to-current transformer.

In idealised form, the grid resistance, or input resistance, may be made infinite so as to impose zero circuit loading, powerwise. In practice the grid should not be allowed to open-circuit during periods of non-connection to a conductive source, otherwise the meter may be damaged by excessive plate current. Thus it is desirable to close the grid-to-cathode circuit decisively with a grid resistor—of resistance as high as practicable—in order that such grid resistor itself shall not draw significant power from the source.

Although it illustrates nicely the basic principles involved, the meter circuit of Fig. 1 suffers from numerous drawbacks. Unless the grid is kept negative with respect to the cathode during operation, it will draw current and so load the source of voltage to be measured. The grid must be kept more negative than the highest voltage to be measured. This entails a high plate voltage if the tube is to operate as a Class A amplifier, desirably linear over any useful range of input voltages. The negative grid will prevent grid current, but the high plate voltage will result in what might be termed "gas" current, or "ion" current in the grid circuit when the resistance therein is high—**even though the grid is negative.** Add to this the unpleasant facts that there is no easy way of covering a multiplicity of widely different voltage ranges and that the calibration of the instrument is extraordinarily dependent upon filament and plate voltages as well as upon long-time changes in tube characteristics, and it becomes apparent that it is of little practical value. Investigation starting from the prior observations of others has revealed that these problems of the simple d.c. vacuum-tube voltmeter can be solved—whereupon more will promptly take their place. But let's take them as they come.

MULTIPLIER "STICK"

An almost unlimited range of full-scale voltage ranges may be obtained most economically by providing a tapped resistance "stick," or resistive input voltage divider, as shown in Fig. 2. This may consist of a multitap switch to move the grid down progressively from the top of the "stick" toward its bot-

tom, the total resistance of the "stick" shunting the source and representing the practical value of meter-input resistance, while the position of the grid tap determines the voltage range in use. Because of inescapable capacitances associated with the (desirably non-inductive) resistors making up the "stick," it will be useless in a.c. measurements without inconvenient capacitative compensation for each step. But there is no need to worry about this yet.

The use of this input resistor "stick" allows a great enough number of ranges to make the d.c. vacuum-tube voltmeter quite universal in application, if its initial sensitivity be adequate for the lowest voltage range desired. It will simplify the design of the circuit, since all that is required basically is a single low-range v.t. voltmeter, the variable input "stick" serving to give this single-range meter as many voltage ranges as may be desired.

What of the resistance of this "stick"? Its total resistance must be high if it is not to load high-impedance circuits to the point where the accuracy of measurement becomes seriously affected. Fifty megohms seems a desirable total "stick" resistance. This will constitute the vacuum-tube voltmeter's input resistance if all other problems are suitably solved. Fig. 2 gives actual resistance values for such a 50-megohm "stick" with six taps distributed down it to give voltage ranges of 3, 12, 30, 120, 300 and 1,200 volts. (Actually, the v.t.v.m. which follows the tap "sees" only 0 to 3 volts total for each of these ranges.)

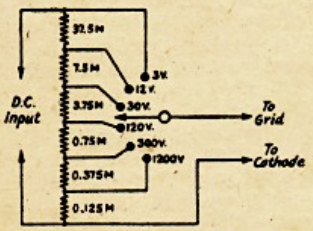


Fig. 2.—Voltage divider or "stick" for obtaining multiple voltage ranges. All resistors are of ½-watt rating. Each should consist of two lower-resistance units in series matched to an accuracy of plus or minus one per cent.

ELIMINATING GRID AND "GAS" CURRENTS

What about grid or "gas" current when the grid tap is moved from 125,000 ohms progressively upward in increasingly large resistance steps to a total of 50 megohms? The designer and the user can deceive himself by saying, "zero-set the meter with the input terminals short-circuited." That is **too** simple—and seemingly a too-popular misconception of the proper solution. Its effect is to short-circuit the input grid resistor in order to set electrical meter zero before operation, ignoring the effects of "gas" current which causes a significant initial meter reading when the input terminals are opened and "gas" current appears.

If the voltage source to be measured is of low resistance, such as a power supply or battery, this will be permissible in practice since "gas" or grid-current effects once more will disappear when this low-resistance source is connected between grid and cathode. They will **not** disappear, however, when the source resistance is high, as in amplifier grid-voltage measurements.

An instrument requiring that its input terminals be temporarily short-circuited in order to set meter zero initially therefore will render invalid any low-voltage measurements across high-resistance circuits.

So we are back at one of the besetting sins of most vacuum-tube voltmeters to date.

To eliminate **grid current** the v.t.v.m. grid must be kept definitely negative with respect to its cathode for all orders of input voltage to be measured. But this does nothing for **"gas" current** (often mistaken for tube-base leakage, grid current, or almost anything but what it really is). Gas current is a function of the plate voltage applied to a vacuum tube. It does not show up noticeably in ordinary applications until the grid resistance is made very high—of the order of megohms. But, a 50-megohm input resistance is necessary if the v.t.v.m. is not to impair seriously the accuracy of voltage reading taken when it is shunting the high value of grid resistance often found in resistance-coupled amplifier circuits which must be tested by a universal meter.

INDICATOR SENSITIVITY

The solution is to apply to the tube of the v.t.v.m. a plate voltage so low that "gas" current cannot occur to any effective degree. This plate voltage will be around 20 volts, preferably less. With such a low value of plate voltage and with the grid negative enough never to allow the maximum-value input voltage to be measured to drive the grid positive, examination of tube characteristics indicates that there will be mighty little plate curent to actuate the indicating meter. A 50 or 100 microampere meter is a costly thing at best, and unduly sensitive to mechanical abuse—of which any universal meter will receive plenty in service. It is highly desirable to use a basic meter movement of 0-1 milliampere sensitivity because it is more easily obtained, is more rugged, and imposes a less exorbitant cost premium on the final instrument than a more sensitive meter.

One approach to this particular problem is to use a high-plate-current power pentode operated at low E_p in place of the simple triode. This is workable, but since it is going to be necessary to use two tubes eventually, it is not an ideal solution because it is inevitable that separate tubes, not manufactured identically, will age in a dissimilar manner. The tube manufacturers state that the maintenance of uniformity of sections of dual triodes is greater over a period of time than that of separate tubes. Thus, a dual triode is indicated. Additionally, the fewer and the smaller the elements in the selected tube the better, since the possibility of "gas" current developing over time, even at the ridiculously low plate voltage necessary to eliminate it to start with, is minimised by reducing the amount of metal in the tube's evacuated envelope.

At this point the ubiquitous cathode follower is brought in. A definite and constant order of "gas" current in the v.t. voltmeter tube can be tolerated **if it does not vary**, as it would were the input grid resistance to be changed in the course of changing ranges. The cathode follower permits the satisfaction of this requirement and, at the same time, permits the use of a following **meter-actuating** tube "seeing" a constant grid resistance. The cathode follower may follow immediately the 50-megohm input voltage-divider "stick" of Fig. 2.

When operated at about 17 volts on its plate, none of the usual and unpleasant errors in meter reading arising from "gas" current will be introduced and since its grid automatically is negative, by virtue of the large and heavily degenerative cathode resistor, R1, of Fig. 3, there is no cause for worry about grid current. However, at this low plate voltage, there is insufficient plate-current change to operate a 1 Ma. meter movement directly, exactly as mentioned previously. Also, the circuit will have the nature of a rectifier in the sense that, for a negative voltage applied to the grid, the plate current cannot **decrease** by the same amount it will **increase** for an equal positive voltage applied to the grid of the tube.

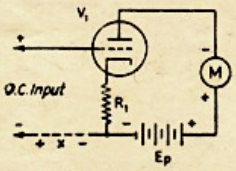


Fig. 3.—Cathode follower coupling stage. The voltage drop across R1 is partially bucked out by a fixed voltage at X to provide Class A operating bias.

If any claim to general usefulness is to be made for the instrument, it is necessary substantially to prevent changes in the tube itself with ageing from effecting its operation. This can be done by making the cathode resistor, R1 of Fig. 3, very large. A suitable value is 5 megohms which, with 17 volts on the tube's plate, means almost no plate current at all. Sufficient cathode resistance should be used to degenerate the tube gain to a point where age and other factors affect operation practically not at all.

Any departure from Class A operation, with its associated linearity, which is required in the final instrument, cannot be tolerated. So the voltage drop across R1 is determined and a potential sufficient to shift the actual operating grid bias up to a value suitable for Class R operation and linearity is placed in series with the grid only, as at X in Fig. 3. Having previously assumed a 3-volt basic range for the v.t. voltmeter proper, the grid may be set at about 4

volts negative with respect to its cathode. If this is done the operation of the tube will be found to be linear over a suitable input-voltage range in both directions; i.e., with the grid run 3 volts positive or 3 volts negative. This total 6-volt range is required so that the polarity may be reversed by a suitable switch at the meter itself for reading either negative or positive voltages within the range of the final instrument without the need for reversing input connections.

METER AMPLIFIER

All of this looks like something promising so far as it goes—a 50-megohm input resistance, enough taps thereon to give all the d.c. voltage ranges reasonably required in the six steps possible with a conventional range switch, freedom from grid current and, most important, absence of "gas" current effects to a point where the usual short-circuiting of input terminals to set an initial meter zero can be eliminated. Zero is set simply, with the input open or shorted, accompanied by a pleasing order of stability, all thanks to the cathode follower operated at very low plate voltage.

The voltage appearing across R1 of Fig. 3 will be a fixed d.c. voltage resulting from plate-current flow through V1, upon which will be super-imposed a d.c. voltage varying almost as does the applied grid input voltage. This variation may be used to actuate a second tube which, in turn, actuates the 0-1 Ma. meter movement. The initial fixed positive voltage across R1 can be washed out by another device later on, so let us ignore it for the moment.

The grid and cathode of the second, or meter-actuating triode will be connected across R1. This tube must be operated at a sufficiently high plate voltage so that a 3-volt change at its grid will cause a 1 Ma. change in its plate current, plus something to spare to allow for variations in individual tubes when first setting up voltage calibration and ranges. In Fig. 4 is depicted the cathode follower at V1, exactly as described above, with the meter-actuating tube at V2. With R1 established at 5 megohms, the excessive negative bias which the voltage drop across R1 would place on the grid of V1 is offset by means of the positive bucking bias provided by the potential B1 and connections are made so as to apply a replica of the varying input voltage appearing across R1 to the grid of V2. But again, ageing of V2 should not affect too significantly the operation of this now-beginning-to-develop instrument.

To obtain a 1 Ma. current change in the plate circuit of V2, for a 3-volt

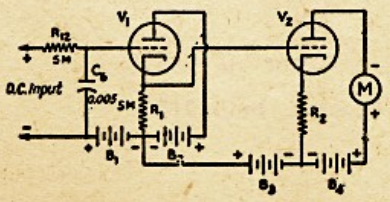


Fig. 4.—Cathode follower and meter-actuating circuits. B1 and B3 are bucking voltages.

input to V1, V2 must be operated at some more normal plate voltage than in the case of V1. This spells an initial order of "gas" current in V2 as a result of the 5-megohm cathode resistor of V1 appearing in the grid circuit of V2. Actually, there is no need to worry at all about this, for the value of R1 never is **changed** in operation and therefore whatever "gas" current V2 exhibits will be constant for all practical purposes; its operational effect can be washed out by the zero-set adjustment which will be provided later.

To divorce the variability of V2 with time, etc., from the situation, cathode degeneration may be employed once again, this time by means of R2. If R2 be about 40 kilohms and the plate potential B4 about 200 volts, everything will be satisfactory. But once again excessive negative bias must be bucked out, this time upon the grid of V2, exactly as was done for V1 by potential B1. This may be done by obtaining some bucking bias for V2 from the fixed voltage drop across R1, already in the grid circuit of V2, and by supplementing this bucking bias with a suitable potential at B3.

SUPPLY VOLTAGE COMPENSATION

By following properly all of the preceding steps, a portion of the skeleton of a d.c. vacuum-tube voltmeter, free from "gas" and grid current effects in their usual ruinous form, has been derived, and simultaneously long-time changes in tube characteristics have been prevented quite effectively from influencing final results, except as they may be compensated for by a meter zero-set not as yet provided. But what of variations in plate and heater voltage? The plate voltage may be regulated at some small expense, but the same does not hold for economical regulation of heater voltage and cathode emission, although power-line operation (with its invariably fluctuating line voltage) certainly is desirable.

When the circuit of Fig. 4 is converted into what looks like a push-pull circuit, significant and sizable gains in stability versus short-time variation in power-line voltage are obtained. The actuality is depicted in Fig. 5. Here V1a and R1a have been added to balance V1 and R1, as have V2a and R2a to balance V2 and R2. If a 6SN7GT dual triode is selected for V1 and V1a, and another 6SN7GT tube for V2 and V2a, a condition is obtained where, assuming only commercially-acceptable tubes in each position, the whole circuit is balanced nicely against supply-voltage variations. Simply stated, whatever change occurs in the V1-V2 branch of the circuit occurs in substantially equal degree, but in opposite polarity, in the circuit branch containing V1a and V2a. With this arrangement variations in supply voltages, plate, grid and heater, of 10% cause a change in meter reading of only approximately 1%.

ZERO ADJUSTMENT

By connecting the 0-1 Ma. meter from cathode to cathode between V2 and V2a, the adjustable resistor, R3, can be inserted conveniently in series therewith, providing a means for setting the voltage range; i.e., R3 is adjusted so that a 3-volt input will give full-scale deflection at M. If R3 is made about 3 kilohms, this may be done nicely for almost all commercially encountered 6SN7GT tubes which may be used at V2 and V2a, but **first** the meter zero must be adjusted **electrically** by balancing the cathode currents of V2, and V2a. Here a 3-kilohm potentiometer, R4, in the plate circuits of V2 and V2a serves with complete satisfaction. Coincidentally it is found that with 1,200 volts applied to the 3-volt range, the meter is provided with practically 100% protection against overload burn-out!

Since V1, V1a, V2 and V2a are operated linearly as Class A amplifiers, investigation of the meter "slope," or deflection vs. applied d.c. voltage, pleasingly reveals that equal increments in input voltage produce equal increments in meter deflection, and that a linear d.c. voltmeter with equal spacing between meter-scale graduations is obtained with this arrangement.

Adding resistor R12 in series with the grid of V1 and C6 in shunt to ground provides a filter which operates to wash out any effects of a.c. which simultaneously may be superimposed upon the d.c. voltage which is to be measured.

PRACTICAL CIRCUIT

Since all of the problems of a 50-megohm input resistance d.c. vacuum-tube voltmeter have been nicely solved, these accomplishments may be translated into a practical constructable circuit. This is done in Fig. 6, in which all previously referenced parts correspond to those of the preceding diagrams. Included are the input voltage divider range-selector "stick" of Fig. 2, at the left, supplemented by R9, a 75-megohm resistor with which any of the six voltage ranges may be multiplied by a factor of 2.5. Thus are realised the six original voltage ranges of 3, 12, 30, 120, 300 and 1200 volts full-scale, all at 50 megohms input resistance, plus six additional ranges (when the input is connected across the terminals marked "3000 v." and "Com.") of 7.5, 30, 75, 300, 750 and 3,000 volts.

These new and added ranges* all are at the seemingly astronomical input resistance (for a stable instrument) of 125 megohms as "seen" by the source to be measured! Yet all positions are equally stable, equally "cool," with no

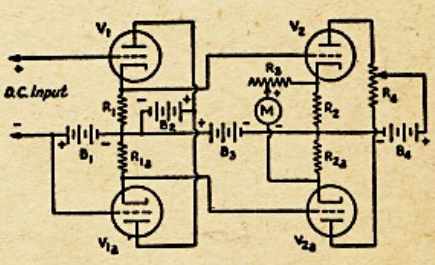


Fig. 5.—This is the circuit of Fig. 4 with the tubes, V1a and V2a added to provide a balanced circuit.

* Not included on basic range selector switch for reasons of complexity and necessary high voltage insulation.

change in meter zero regardless of whether the input terminals are open or short-circuited or ranges switched —quite a contrast to the conditions under which the design started.

Batteries B1, B2, B3 and B4 have been replaced by the voltage-dropping resistors R5, R6, R7 and R8, all connected across the output of the a.c. power supply made up of the rectifier tube, V3, filter capacitors C1 and C2, the small power transformer, T, and the "on-off" switch, S1. By adding the d.p.d.t. switch, S2, the circuit may be arranged to reverse the meter polarity, and thus input polarity, so that positive or negative voltages of anywhere from 0.05 through 3000 volts may be read without reversing input connections—simply by rotating two switch knobs.

CURRENT AND RESISTANCE MEASUREMENTS

At last possessed of a thoroughly practicable, stable and dependable d.c. vacuum-tube voltmeter, truly "vacuum-tube" in its functioning, all that need be done now is to make it function as an ohmmeter, as an a.c. and r.f. voltmeter, db. meter and milliammeter. But the path of the original investigator is easy only when reduced to ultimate written description! Taking the easy ones first, milliampere ranges may be provided by switching suitable shunts across the basic meter, M, by means of an added section on the range switch, this switch and shunts being selected by adding two contacts to what now may be termed the "function" switch, S2, and bringing meter and selectable shunts out to suitable input terminals. This is so conventional as to be worthy of little notice, except to select practically useful current ranges just as was done in choosing the voltage ranges—ranges which will permit the most generally made measurements to be read well up on the meter scale where the basic milliammeter is of greatest accuracy.

Fig. 7 shows fundamentally how resistances from 0.2 ohms up through 2000 megohms may be measured, again in six ranges so proportioned that the most frequent measurements will fall upon "open" portions of the meter scale which, by necessity, is substantially logarithmic and therefore "crowded" at high readings. The six-position switch of Fig. 7, may be yet another switch section added to the basic range switch, brought into circuit by suitable switching added to the v.t.v.m. of Fig. 6.

The whole principle involved is so simple as to deserve no more than passing mention, except to state that the resistance of an unknown resistor, Rx, is measured, not in the usual terms of the current through it, but in terms of the voltage across it. This gives a **right-reading** ohmmeter scale in sharp and pleasing contrast to the backward-reading ohmmeter scales of more conventional service instruments.

By virtue of having switched out the voltage-range "stick" for ohmmeter operation, the v.t.v.m. of Fig 6 "looks" like an infinite resistance to the ohmmeter circuit. This helps in measurements of resistances up to 2000 megohms using only a 3-volt dry battery. Unfortunately it is not easy to eliminate this battery for resistance measurements in favor of drawing an equivalent voltage from the v.t.v.m. power supply. This is because the voltage regulation of the ohmmeter voltage supply must be exceptionally good. The v.t.v.m. power supply has poor regulation to save space and weight, since good regulation is not necessary to the v.t.v.m. power supply, regulation in the instrument as a whole being automatic by virtue of its balanced-circuit design.

It might be added that two 1½-volt standard "A" cells, procurable rather cheaply, work out more economically than would the cost of parts needed to eliminate them. Their life is indefinitely long unless they are used consistently to measure resistance of less than 100 ohms—a condition seldom encountered frequently in radio design or servicing in any case.

A.C.-R.F. OPERATION

At first glance all that is necessary for a.c. voltage measurement (and this **should** mean r.f. up into the u.h.f. region if the instrument is to be worthy of its name) should be to connect a suitable rectifier between the source of voltage to be measured and the d.c. vacuum-tube voltmeter of Fig. 6. It is regrettable that life is not that simple.

The presumed simplest form of a.c.-to-d.c. rectifier is a two-element diode vacuum tube. This type of rectifier has been employed in the best instruments heretobefore available, but it is not ideal. To begin with, the d.c. output vs. a.c. input curve is not linear over the desired low-voltage range of 0-3 volts. Additionally, a diode draws some power from the circuit to which it is applied, power drawn to keep its input capacitor

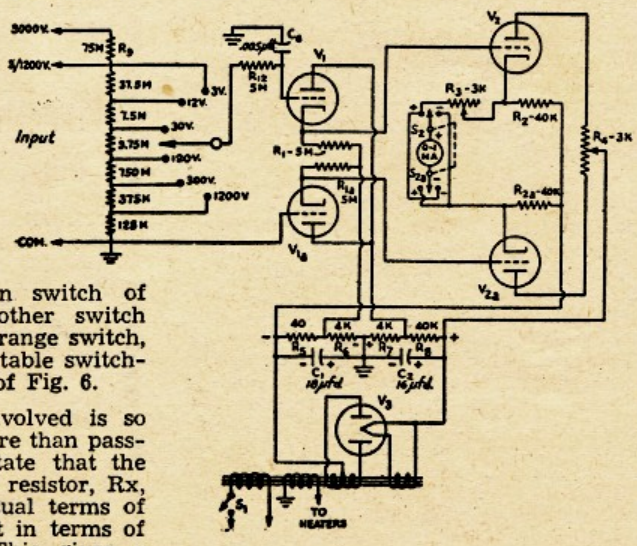


Fig. 6.—Practical vacuum-tube voltmeter circuit with values. Symbols correspond to equivalent units in preceding diagrams.

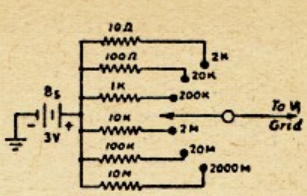


Fig. 7.—Circuit added for resistance measurements.

charged (from which is drawn the steady d.c. voltage to actuate the following d.c. meter). True, this power is very small, and suitable proportioning of the diode circuits can result in an effective input resistance which is desirably high.

Knowing of the excellent linearity of the so-called "infinite-impedance" detector possessed of potentially-infinite input resistance, one is inclined to turn to it—exactly as the author did in an early design. Depicted in Fig. 8, it appears off-hand to be an ideal solution to the problem of an a.c. rectifier for a v.t.v.m. Appearances can be deceiving, however. Theoretically it might be supposed that the capacitor, C3, shunting the large (and therefore degenerative) resistor, R9, would charge up to the peak value of the a.c. input voltage to be measured, and that if the values of C3 and R9 were large enough, this charge would be held substantially until the next input charging cycle. Unfortunately, effects occur upon which the author prefers to express no positive views.

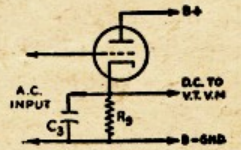


Fig. 8.—Infinite-impedance detector circuit which was tried as a rectifier for a.c. measurements.

The d.c. output voltage does not appear to approximate the 1.41 times the value of sine-wave a.c. input which might be anticipated. This is inconvenient but not ruinous. On the other hand, anticipated linearity, with consequent identicalness of slope between successive voltage ranges for such a rectifier, has been found disappointing. Add to this the fact that the maximum input voltage which may be handled must be significantly less than the available plate supply voltage and what appeared at first glance to be a very nice solution turns out otherwise. (It is not possible to put a voltage-divider "stick" ahead of the a.c. rectifier with particularly happy results.)

DIODE RECTIFIER

Fig. 9 shows a diode rectifier circuit in which C4 insulates the rectifier from d.c., so that a.c. superimposed upon d.c., as in a vacuum-tube plate circuit, may be separated and measured independently. On the positive cycle of the applied a.c. voltage, the diode, V4, passes current, thus charging C4. On the negative half of the cycle, V4 is non-conduct-

ing, and C4 discharges slowly through R10 and R11—slowly because of the high value of R10 and R11 and the effectively high value of C4 with respect to the frequency of the applied a.c. voltage. Here a problem is encountered —the value of C4 suitable for 20 cycles necessitates a type of capacitor construction seldom satisfactory in terms of losses and inductance at 100 megacycles, for example.

In the instrument to be described in Part II. of this article, this disadvantage is circumvented by building V4 into a removable probe which contains a value of C4 suitable for middle audio frequencies on up to over 100 megacycles; also built into the instrument is a much larger duplicate of C4, such as is suitable for low-frequency operation, and an arrangement is provided so that this large C4 is brought into the circuit only when the probe is plugged into its receptacle in the instrument.

Low frequency measurements are made by means of the d.c. probe cords. For all r.f. (and high a.f.) work the probe is withdrawn, to be contacted directly to the circuit carrying the voltage to be measured without any intervening leads to introduce serious, if not ruinous, errors.

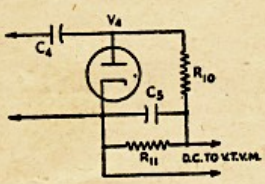


Fig. 9.—Diode rectifier circuit for a.c. measurements.

Since it has appeared that making R10 and R11 large operates to minimise the effects of variation in the internal resistance of individual diodes, R10 conveniently may be made 20 megohms. R11 then may be the 50-megohm d.c. range "stick" of Fig. 2 and Fig. 6. C5 is an a.c. filter capacitor intended to complete the a.c. load circuit of the diode V4 and to aid in removing a.c. from the d.c. v.t.v.m. proper. Making R10 20 megohms serves another useful purpose in addition to making the a.c. diode load resistance high. To the 50-megohm resistance, R11, the resistance R10 bears the relation of 1.4:1, the same relation existing substantially between the peak voltage output of the a.c. rectifier (1.4:1 r.m.s. sine-wave a.c. input, approximately) and the r.m.s. a.c. input.

Theoretically it should be possible to connect the output of the rectifier of Fig. 9 to the input of the d.c. v.t.v.m. of Fig. 6 and read a.c. voltages directly upon the d.c. meter scale of the latter. This is a sound assumption only in part. The non-linearity of the diode rectifier will necessitate a new meter scale for the 3-volt range, although the diode will become sufficiently linear to permit doing just this on the higher-voltage ranges. The d.c. recovery vs. a.c. input characteristic of the diode will not work out precisely as expected, so that the d.c. output may not remain in consistent step for successive ranges. This can be compensated for quite nicely by using, not one range-set adjustment, such as R3 of Fig. 5 and Fig. 6 for all d.c. ranges, but by arranging additional switching to select different values of a.c. range-set resistors as required.

In practice this will work out to about four a.c. range-set resistors for six ranges—one for 3 volts, one for 12 volts, one for 30 volts, and one for 120, 300 and 1200 vlts. This is not a serious problem physically, but it is somewhat annoying when translated mentally into the behaviour-complexity of the seemingly simple circuit of Fig. 9.

REMOVING CONTACT POTENTIAL

Thus far no mention has been made of contact potential generated within the diode in the absence of any applied voltage (except heater). Suffice is to say that, using a 9006 u.h.f. diode for V4, the 70-megohm d.c. load will result in the appearance across R11 of about 1.0 volt in the absence of any input voltage whatsoever. This must be eliminated if it is not to cause false meter readings on those voltage ranges low enough for 1.0 volt to represent a significant error—below 300 volts, for example. So again a balancing tube similar to V1a and V2a is added—in this case V4a of Fig. 10. With four resistors in its own "stick" totalling 10 megohms, V4a will produce contact potential equal to or greater than that developed by V4 across the 50-megohm range-selector "stick," or it can easily be made to do so by interchanging any pair of 9006 tubes so far encountered.

On a.c., R13 is adjusted initially for meter zero, then left alone. This equal and opposite contact potential is applied to the balance cathode follower, V1a, through a suitable switch. This switch, shown in Fig. 10, selects a portion of the contact potential developed across the four resistors in series comprising the load of V4a in step with that selected from V4 by manipulation of the range-selector switch controlling the 50-megohm voltage-multiplier "stick" of Fig. 2 and Fig. 6 so as to keep contact potential nicely balanced out for the 3, 12, 30 and 120-volt a.c. ranges of the instrument. The error introduced in the 300 and 1200 volt ranges from this source is so small as to be neglected, since it is only on the order of eight one-hundredths to three tenths of one per cent.

What is the effective a.c. input resistance of such a rectifier? This is questionable for, while diodes are very simple looking devices, their behaviour seems to belie their seeming simplicity. A conventional method of stating the a.c. input resistance might be to say that it is represented by the actual load resistance shunted by the diode-probe capacitance. This is believed to convey a questionable picture and one not directly meaningful in practice. It seems better, after considerable cogitation, to state that the effective loading upon a circuit to which this particular diode network is applied will look like r÷3 shunted by the diode-probe capacitance, where r is the diode load resistance.

Thus it seems conservative to say that the rectifier of Fig. 9 and Fig. 10 will be "seen" by a voltage source to be measured as 6.6 megohms shunted by 8 uF. A little calculation will show that this represents, commercially at least, an unusually high order of v.t.v.m. input resistance in a.c. operation. This resistance will diminish as the frequency is increased, but the same thing applies to the practically attainable impedances of tuned circuits across which voltages are to be measured in most cases as the frequency is made higher.

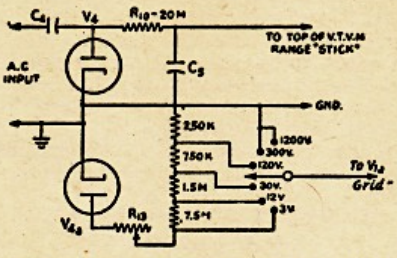


Fig. 10.—Balancing tube, V4a, added to balance out "contact" potential.

SUMMARY

It is believed that several new and novel features have been described. Specifically these are: the insertion of a low-E_p cathode follower and duplicating balancing tube between a simple two-tube balanced d.c. vacuum-tube voltmeter and an input range-multiplier network in order to eliminate the deleterious effects of grid and "gas" currents as a result of changing input resistance; the automatic plug-in substitution of different values of a.c. diode-input capacitance in order efficiently to cover a wide frequency range in one instrument; the provision of a variable source of balancing contact potential which may be kept in step with that resulting from a diode preceding a selective resistive voltage-dividing network. It is hoped that these small contributions to the art of v.t.v.m. design may be of interest.

QUESTIONS AND ANSWERS

VK6WZ would like to know:—

1. A list of commercial telegraph stations which broadcast Press at regular times. JAG, Tokyo, sends Press at a fast bat nightly at about 2000 E.A.S.T. outside the high frequency end of the 7 Mc. band, but frequency, time of operation and speed of others (particularly during the day time) would be welcome.

2. Q.—Can anyone thell me where this new term **electron volts** comes from and how these **electron volts** differ from the good old fashion variety?

A.—This is just one of many instances in which scientists have taken a perfectly innocent word or words, given them a specialised meaning for their own use, and then were quite surprised that the general public wondered what on earth they were talking about.

An **electron volt** is not a unit of **voltage** like microvolt, millivolt, kilovolt, etc., but a measure of **energy**. Suppose we think about a cathode ray tube. Electrons are accelerated away from the cathode by the h.t. of say 1,500 volts. When the electrons have been accelerated and are moving down the tube at a constant speed, they each possess a certain amount of **energy** due to the fact they are moving. (When they hit the fluorescent screen part of this energy appears as light and the rest as heat.)

The energy each electron has is said to be 1,500 **electron volts.** Likewise **1 electron volt** is the energy an electron has if it is accelerated by a potential of 1 volt. This is a very small amount of energy.

Just to see how small it is, let's compare it with the measure of energy most are familar with, the kilowatt hour. As a simple case, think of a diode which has 1 volt across it and this causes a current of 1 amp. Then the power it draws is 1 watt, so in 1,000 hours it will use 1 Kwh. which will cost you about two pence. Now each electron which flows has an energy of 1 electron volt (which is turned into heat when it hits the plate.) And in the current of 1 amp. there are 600,000,000,000,000,000,000 electrons per second, each with 1 electron volt of energy. So if you multiply this rather large number by the number of seconds in 1,000 hours, the answer is the number of electron volts of energy which equals a kilowatt hour. So an e.v. is not much energy.—A.K.H.

P.S.—Considering the first sentence I wrote, I suppose I should remark that where I've used the words power and energy, they have their scientific meaning.

NEW, LOW-COST VARNISHED FIBERGLAS INSULATION

A new varnished fiberglas insulation, which, because of its lower cost, is expected to greatly broaden use of this desirable Class B insulating material, has been announced by the Irvington Varnish & Insulator Co., Irvington, 11, N.J., U.S.A.

This new insulation affords higher dielectric strength and greater flexibility than the conventional material because of a new principle employed in weaving the base fiberglas cloth. This new weave permits better penetration of the insulating varnish between the cloth fibres. The new weave also provides far greater flexibility of the varnished product, while the mechanical strength more than meets all requirements for core wrappings, field coils, punchings, etc.

Irvington style O.W. Varnished Fiberglas is available in three thicknesses—0.007", 0.010", and 0.012". It is manufactured in two colors, black and yellow.

CHANGES OF ADDRESS

W.I.A. Members are requested to promptly notify changes of address to their Divisional Secretary, not direct to "Amateur Radio."

DX Countries of the World

The list of countries as hereunder, and as amended from time to time in Federal Notes, is the Official List to be used in connection with the issue of the Australian DX C.C. Award, and is also the official list used by the A.R.R.L. for their Award.

The list below shows first the Conntry, the Zone number in parenthesis (as used by the "CQ" W.A.Z. Award) and the Amateur Prefix.

Aden and Socotra Island (21) VS9
Afghanistan (21) .... YA
Alaska (1) KL7
Albania (15) .... ZA
Aldabra Islands (39)
Algeria (33) .... FA
Andaman & Nicobar Is. (26) VU5
Andorra (14) .... PX
Anglo-Egyptian Sudan (34) .... ST
Angola (36) CR6
Antarctica (12, 13, 29, 30, 32, 38, 39) VK1
Argentina (13) .... LU
Ascension Island (36) ZD8
Australia (inc. Tas.) (29, 30) .... VK
Austria (15) .... (MB9) OE
Azores Islands (14) CT2

Bahama Islands (8) VP7
Bahrein Island (21) MP4
Baker, Howeland & Am. Phoenix Islands (31) KB6
Balearic Islands (14) EA6
Barbados (8) VP6
Basutoland (38) ZS8
Bechuanaland (38) ZS9
Belgian Congo (36) OQ5
Belgium (14) .... ON
Bermuda Islands (5) VP9
Bhutan (22)
Bolovia (10) .... CP
Bonin and Volcano Islands (Iwo Jima) (27) KG6
Borneo, British North (28) VS4
Borneo, Netherlands (28) PK5
Brazil (11) .... PY
Brunei (28) VS5
Bugaria (20) .... LZ
Burma (26) .... XZ

Cameroons, French (36) .... FE
Canada (2, 3, 4, 5) .... VE
Canal Zone (7) KZ5
Canary Islands (33) EA8
Cape Verde Islands (35) CR4
Caroline Islands (27) KC6
Cayman Islands (8) VP5
Celebes & Molucca Is. (28) PK6
Ceylon (22) VS7
Chagos Islands (39) VQ8
Channel Islands (14) .... GC
Chile (12) .... CE
China (23, 24) .... (B)
Christmas Island (29) ZC3
Clipperton Island (7)
Cocos Island (7) .... TI
Cocos Islands (29) ZC2
Colombia (9) .... HK
Comoro Islands (39)
Cook Islands (32) ZK1
Corsica (15) .... (F)
Costa Rica (7) .... TI
Crete (20) .... SV
Cuba (8) .... CM, CO
Cyprus (20) .... (MD7) ZC4
Czechoslovakia (15) .... OK

Denmark (14) .... OZ
Dodecanese Islands (Rhodes) (20) SV5
Dominican Republic (8) .... HI

Easter Island (12)
Ecuador (10) .... HC
Egypt (34) .... (MD5) SU
Eire (Irish Free State) .... EI
England (14) .... G
Eritrea (37) .... (MD3) MI6
Ethiopia (37) .... ET

Faeroes, The (14) .... OY
Falkland Islands (13) VP8
Fanning Island (Washington Is.) VR3
Fiji Islands (32) VR2
Finland (15) .... OH
Formosa (24) C3
France (14) .... F
French Equatorial Africa (36) .... FQ
French India (22) .... FN
French Indo-China (26) .... FI
French Oceania (Tahiti) .... FO
French West Africa (35) .... FF
Fridtjof Nansen Land (Franz Josef Land) (40) UA1

Galapagos Islands (10)
Gambia (35) ZD3
Germany (14, 15) .... DL
Gibraltar (14) ZB2
Gilbert, Ellice & Ocean Is. (31) VR1
Goa (Portugese India) (22) CR8
Gold Coast (and British Togoland) (35) ZD4
Greece (20) .... SV
Greenland (40) .... OX
Guadeloupe (8) .... FG
Guantanamo Bay (8) KG4
Guatemala (7) .... TG
Guiana, British (9) VP3
Guiana, French, and Inini (9) .... FY
Guiana, Netherlands (Surinam) (9) PZ
Guinea, Portuguese (35) CR5
Guinea, Spanish (35)

Haiti (8) .... HH
Hawaiian Islands (31) KH6
Heard Island (39) VK1
Honduras (7) .... HR
Honduras, British (7) VP1
Hong Kong (24) VS6
Hungary (15) .... HA

Iceland (40) .... TF
Ifni (33)
India (22) .... VU
Iran (21) .... EP, EQ
Iraq (21) .... (MD6) YI
Ireland, Northern (14) .... GI
Isle of Man (14) .... GD
Israel (20) 4X4
Italy (15) I

Jamaica (8) VP5
Jan Mayen Island (40)
Japan (25) .... JA
Jarvis & Palmyra Is. (31) KP6
Java (28) .... PK
Johnston Island (31) KJ6

Kenya (37) VQ4
Kerguelon Islands (39)
Korea (25) .... HL
Kuwait (21) .... (VT1)

Laccadive Islands (22) VU4
Lebanon (20) AR8
Leeward Islands (8) VP2
Liberia (35) .... EL

Libya (34) .... (MC1, MD1, MD2, MT2)
Liechtenstein (15) HE1
Luxembourg (14) LX

Macau (24) CR9
Macquarie Island (30) VK1
Madagascar (39) .... FB
Madeira Islands (33) CT3
Malaya (28) VS1, 2
Maldive Islands (22) VS9
Malta (15) ZB1
Manchuria (24) C9
Marianas Is. (Guam) (27) KG6
Marion Is. (and Prince Edward Is.) (39) ZS2
Marshall Islands (31) KX6
Martinique (8) .... FM
Mauritius (39) VQ8
Mexico (6) .... XE
Midway Island (31) KM6
Miquelon & St. Pierre Is. (5) .... FP
Monaco (14) .... (CZ)
Mongolian Rep. (Outer) (23) .... (JT)
Morocco, French (33) .... CN
Morocco, Spanish (33) EA9
Mozambique (37) CR7

Nepal (22) VU7
Netherlands (14) .... PA
Netherlands West Indies (9) .... PJ
New Caledonia (32) .... FK
New Guinea, Netherlands (28) PK7
New Guinea, Territory of (28) VK9
New Hebrides (32) .... FU, YJ
New Zealand (32) .... ZL
Nicaragua (7) .... YN
Nigeria (35, 36) ZD2
Niue (32) ZK2
Norfolk Island (32) VK9
Norway (14) .... LA
Nyasaland (37) ZD6

Oman, Trucial (21) MP4

Pakistan (22) .... AP
Palau (Pelew) Islands (27) KC6
Palestine, Arab (20) ZC8
Panama (7) .... HP
Papua Territory (28) VK9
Paraguay (11) .... ZP
Peru (10) .... OA
Philippine Islands (27) .... DU
Phoenix Is., British (31)
Pitcairn Island (32) VR6
Poland (15) .... SP
Portugal (14) CT1
Principe & Sao Thome Is. (36)
Puerto Rico (8) KP4

Reunion Island (39) .... FR
Rhodesia, Northern (36) VQ2
Rhodesia, Southern (38) .... ZE
Rio de Oro (33) .... (EA8)
Roumania (20) .... YO
Ryukyu Is. (Okinawa) (25) KR6

St. Helena (36) ZD7
Salvador (7) .... YS
Samoa, American (32) KS6
Samoa, Western (32) .... ZM
San Marino (15) .... (M1)
Sarawak (28) VS5
Sardinia (15) .... IS
Saudi Arabia (Hedjaz & Nejd) (21) HZ
Scotland (14) .... GM
Seychelles (39) VQ9
Siam (26) .... HS
Sierre Leone (35) ZD1

Sikkim (22) AC3
Solomon Islands (28) VR4
Somaliland, British (37) .... (MD4), VQ6
Somaliland, French (37) .... (MD4), FL
Somaliland, Italian (37) .. (MS4, MD4)
South Georgia (13) VP8
South Orkney Islands (13) VP8
South Sandwich Islands (13) VP8
South Shetland Islands (13) VP8
Southwest Africa (38) ZS3
Soviet Union:
European R.S.F.S.R. (16) .... UA
Asiatic R.S.F.S.R. (17, 18, 19) UA9, 0
Ukraine (16) UB5
Belorussian S.S.R. (16) UC2
Azerbaijan (21) UD6
Georgia (21) UF6
Armenia (21) UG6
Turkoman (17) UH8
Uzbek (17) UI8
Tadzhik (17) UJ8
Kazakh (17) UL7
Kirghiz (17) UM8
Karelo-Finnish Republic (16) UN1
Moldavia (16) UO5
Lithuania (15) UP2
Latvia (15) UQ2
Estonia (15) UR2
Spain (14) .... EA
Sumatra (28) PK4
Svalbard (Spitzbergen) (40) .... (LA)
Swan Island (8) KS4
Swaziland (38) ZS7
Sweden (14) .... SM
Switzerland (14) .... HB
Syria (20) .... YK

Tanganyika Territory (37) VQ3
Tangier Zone (33) .... EK
Tannu Tuva (23) .... (TT)
Tibet (23) AC4
Timor, Portuguese (28) CR10
Togoland, French (35) .... FD
Tokelau (Union) Islands (31)
Tonga (Friendly) Islands (32).... VR5
Transjordan (20) ZC1
Trieste (15) AG2, MF2
Trinidad and Tobago (9) VP4
Tristan da Cunha & Gough Is. (38) ZD9
Tunisia (33) .... (3V8) FT
Turkey (20) .... TA
Turks & Caicos Islands (8) VP5

Uganda (37) VQ5
Union of South Africa (38) .... ZS
United States of America (3, 4, 5) K. W
Uruguay (13) CX

Vatican City State (15) .... HV
Venezuela (9) .... YV
Virgin Islands (8) KV4

Wake Island (31) KW6
Wales (14) .... GW
Windward Islands (8, 9) VP2
Wrangel Island (19)

Yemen (21)
Yugoslavia (15) .... YU

Zanzibar (37) VQ1

W.I.A. 1950 National Field Day

GENERAL RULES

1. The Wireless Institute of Australia's National Field Day Contest will be held over the week-end of 28th and 29th January, 1950, and will commence at 1500 hours E.A.S.T., Saturday 28th, and continue through until Sunday the 29th at 2359 hours.

2. The Contest is limited to portable stations operating within the Commonwealth and its mandated territories.

3. A portable station, for the purposes of the Field Day, is defined as one whose power is not obtained from either private or public mains, shall not be located closer than 5 miles to the home location of the operators, and shall not be situated in any occupied dwelling.

4. No apparatus is to be set up or erected on the site of the portable station earlier than 6 (six) hours prior to the commencement of the contest. A station may be moved from one site to another within the same State during the period of the Contest.

5. More than one operator may be used in the operation of the portable station, provided that all operators are licenced Amateurs.

6. Operation may be on any of the recognised Amateur bands, and more than one transmitter may be used, providing only one transmitter is used at any one time.

7. When calling, c.w. stations will use "CQ FD," and phone stations will use "CQ Field Day," to indicate they are portable stations. Attention is directed to the requirements for portable stations in the P.M.G's Handbook.

8. SECTIONS.—The Contest is divided into three sections, namely, Open, C.W., and Phone. The Open Section shall consist of both phone and c.w. operation. Participants may enter for all Sections, provided a separate log is entered for each case.

9. LOGS.—Logs must be forwarded through the Division to reach Federal Executive not later than 21st February, 1950, and decisions of Federal Executive in all matters relating to the Contest will be final.

10. The operator(s) will choose the most suitable 24 hours of operation from the total operating time of 33 hours, and submit this 24 hours' period as their log for the Field Day. Any lesser period than 24 hours may be operated.

11. Logs must show the location of the portable, name and call signs of the operators in the party, a description of the transmitter(s), receiver(s), antenna(e) and the power supplies. The power input to the final stage with the antenna connected (which must not exceed 25 watts) will also be shown.

12. Log entries are to be in the following order: Date, time (E.A.S.T.), station worked, Amateur band used, report sent, report received, contacts points claimed, bonus points claimed, QTH of station worked, and portable operator's call. A summary at the conclusion of the log will facilitate checking.

13. The completed log must be signed by each of the operators with a statement that the P.M.G. Regulations and the Rules of the Contest have been observed.

14. SCORING.—For the purposes of the Field Day, the following constitute separate VK districts: VK2, VK3, VK4, VK5 (South Australia), VK5 (Northern Territory), VK6, VK7, and VK9.

15. A complete exchange of report and QTH is necessary before any points may be claimed.

16. Points will be awarded as follows:—

(a) For contacts with a fixed station within the Commonwealth (Rule 14), outside the competitor's State	1 pt.
(b) For contacts with other portable stations in the Contest within the same State	2 pts.
(c) For contacts with stations in Asia, North America, and Oceania (outside the Commonwealth, Rule 14)	3 pts.
(d) For contacts with stations in Europe	5 pts.
(e) For contacts with stations in Africa and South America	7 pts.
(f) For contacts with other portable stations in the contest outside the State	10 pts.
(g) A bonus for each Continent worked on each band. For Oceania, the contact must be outside the Commonwealth, Rule 14, add to the final score	25 pts.
(h) A special bonus for each Interstate or overseas contact, on or above, 50 Mc., add to the final score	50 pts.

17. AWARDS.—An attractive certificate will be awarded to the outright winners in each Section, namely, Open, C.W. and Phone. Certificates will also be awarded to the winner in each State in each Section. Further certificates will be awarded at the discretion of Federal Executive. The outright winners are not eligible for the State awards.

18. Certificates will be awarded to each operator of the winning stations, provided each operator has contacted at least 26 per cent. of the stations contacted.

19. In addition to the certificates for the outright winners, an order to the value of 3 guineas will be awarded for the purchase of a trophy or equipment.

The South African International DX Contest

The S.A.R.L. International DX Contest, which is now established as an annual event, will be staged during January, 1950. All licenced Amateurs throughout the world are eligible and are invited to participate in the Contest.

The Contest is divided into c.w. and telephony sections. The c.w. section commences at 0001 hours G.M.T. on Saturday, 21st January, and closes at 2359 hours G.M.T. on Sunday, 22nd January, 1950. The telephony section commences 0001 hours G.M.T. on Saturday, 28th January, and closes at 2359 hours G.M.T. on Sunday, 29th January, 1950.

RULES OF THE CONTEST

1. All entrants are bound by the rules governing this Contest and, in the event of a dispute, the decision of the President of the S.A.R.L. shall be final.

2. Operation is restricted to the 40, 20, and 10 metre bands. Cross-band operation is not allowed.

3. Contacts with Government or unlicensed stations are ineligible for scoring purposes.

4. Proof of off-band or irregular operation submitted by the official monitor stations will disqualify the offender.

5. SERIAL NUMBERS which will be changed with each contact are to be exchanged between stations. In the case of c.w. stations, the serial will consist of a 6 (six) figure group, the first three figures to be the report followed by the LAST three figures of the LAST SERIAL NUMBER RECEIVED. For your first contact simply add any three figures to the report to be given. For subsequent contacts give the report followed by the serial number of the last station worked.

In the case of telephony, the serial will consist of a 5 (five) figure group, the first two figures to be the report followed by the LAST three figures of the LAST SERIAL NUMBER RECEIVED.

6. SCORING will be as follows: two points for each station worked in your own country. In the case of Africa, VQ1, 2; ZS1, 2, 3, 4, 5, 6, 7, 8, 9; ZE1, 2; and CR7 count two points, making the contest virtually Southern Africa versus the world.

Five points for each station worked in other countries (see A.R.R.L. List). Multiplier is the number of countries worked on ALL bands.

7. Logs are to be sent to: H. R. Bennett, 47 Flower Street, Pretoria, S. Africa.

8. The contestant must submit a log sheet which will have an analysis and a signed declaration. The declaration to be as follows:—"I hereby declare that my station was operated strictly in accordance with the conditions and rules of this Contest and I agree to abide by the decision of the President of the S.A.R.L. in the event of any dispute."

9. An incomplete log or omission to submit an analysis or failure to make the declaration will disqualify the contestant.

10. The judging will be done by the S.A.R.L. Contest Committee.

11. The log sheets must show the following:—Date, Time of Contact, Band used, Call Sign, Serial Sent and Received, Points Claimed, Multiplier, Number of Countries worked.

12. All logs are to be in the hands of the S.A.R.L. Contest Committee by 30th April, 1950.

13. Certificates will be sent to the Winners of this Contest in each country outside South Africa.

THE OLD MAN

With conditions in a sorry mess, it has been impossible to criticise either good signals or bad during the last month, so perhaps a word of advice to the large number of newcomers to the Ham ranks may not be out of place. Let us either as Hams with their tickets for years, or the fellow with a ticket for six months, go out of our way to call that new call, and welcome the holder to the bands.

I can, and lots of you will, remember that very nervous feeling when we made our first calls and wondered whether the station called would come back to us. What a thrill it was to be working the fellow you had heard on the air for a long time and how nervous we felt when we tried to copy those first few c.w. contacts. If you can remember all that, then give the new Ham a call when you hear him, and a few words of wisdom that you have learnt by experience.

To the new Ham, whether he be starting off with the humble crystal oscillator feeding the aerial or a multi-stage rig, be sure that the signal you emit is one that will reflect credit upon you. YOU are judged by the signal you put out, just as much as you would be for the cleanliness or otherwise of your personal appearance.

Don't be afraid to call the older Ham. If he is the right type he will enjoy the chance of welcoming you to the air. If he is sending too fast don't, whatever you do, come back and say received, when you only got about half. He may have asked a few questions and it is quite obvious when you do not reply, that you haven't received it. Be straight forward and tell him that you only received a portion and ask him to QRS, he will be only too glad to slow down for you. If you're not sure of your procedure, seek out the older Ham who will be glad to put you right. Have a look at the AMATEUR CODE published recently in the Magazine and still to be seen on the front page of the Handbook. Make that your code and your starting point in Amateur Radio.

Join the local Division of your Institute and take a personal interest in its workings, offer your services in a practical way, this is most important. There are far too many people who are content to let the other fellow do the job, but who are only too ready to supply lots of adverse, rather than constructive criticism.

The younger man is sadly needed in our executive ranks to-day. Far too much work is being done by men whose private avocations demand a great deal of their time.

Take care of your purchases, always have in mind when purchasing a piece of equipment whether you can, at a later stage, use it in a more practical way in a larger rig. Careful planning will enable you to save pounds through the years. This piece of advice has been learnt the hard way. Keep your rig tidy, haywire has its place in testing and trying out circuits, but it can be very dangerous, as most of us know.

Finally keep in mind you are constantly near a.c. voltages that CAN CAUSE DEATH. A recent article in "QST" pointed out that the smaller voltages can sometimes be more dangerous than larger ones. One very good tip if you **must** play around with the h.t. on, is to keep one hand in your pocket, but the safest of all is SWITCH IT OFF.

Accurate Frequency Transmissions for 1950 from VK3WI

During last year's four Accurate Frequency Transmissions, the Victorian Division was unable to obtain, on some nights, complete corrections on the frequencies sent, due to the times of operation clashing with other schedules at the Frequency Measuring Station at Mont Park.

Letters have come in from members asking that corrections be obtained on all future transmissions, and, with this in view, Mont Park was contacted and arrangements made to check this year's four transmissions.

To fit in with their long list of activities, it has been necessary to change the time of operation to 9.15 p.m. on Thursdays, also to reduce the time taken by transmitting every 20 Kc., instead of 10 Kc., as in the past.

Dates for the next 12 months are:—

26th January,
27th April,
27th July,
26th October.

Transmissions take place on the 7 Mc. band at intervals of 20 Kc., the frequency of the transmission being accurate to better than 0.01% or 500 cycles.

The operating procedure and times of transmissions are as follows:—

9.5 p.m.—Phone transmission on 7196 Kc. with a general call and information on what is about to take place.

9.15 p.m.—VK3WI changes frequency to 7000 Kc. and calls as follows on c.w. at 12 w.p.m.: AFT (3 times), de VK3WI (3 times), then —...— QRG —...— 7000 Kc. (twice). The key is then held down for one minute; then QSY 7020 Kc. (twice) de VK3WI (once) AR.

The transmitter then commences operation on 7020 Kc. and the procedure is repeated until 7200 Kc. is reached, after which there will be a phone transmission on 7196 Kc., and if corrections are immediately available, they will be broadcast at this time, also on the following Sunday's VK3WI news.

If the hour is not too late, frequency checks will then be made for any member contacting VK3WI.

Details on dial construction and calibration, also the best way to make use of these transmissions, appeared in the January, 1949, issue of "Amateur Radio" pages 14 and 16.

IONOSPHERIC PREDICTIONS FOR THE AMATEUR BANDS

JANUARY, 1950

Nine of the charts, prefixed by the letter "C" for Canberra, refer to forecasts for the South-Eastern Australian States. The remainder, prefixed by the letter "P" for Perth, are for Western Australia.

The Canberra charts refer to the following world zones:—

Zone	Region	Terminal
1	Western Europe	London
2	Mediterranean	Cairo
3	N.-West America	San Francisco
3a	N.-East America	New York
4	Central America	Barbados
5	South Africa	Johannesburg
6	Far East	Manila

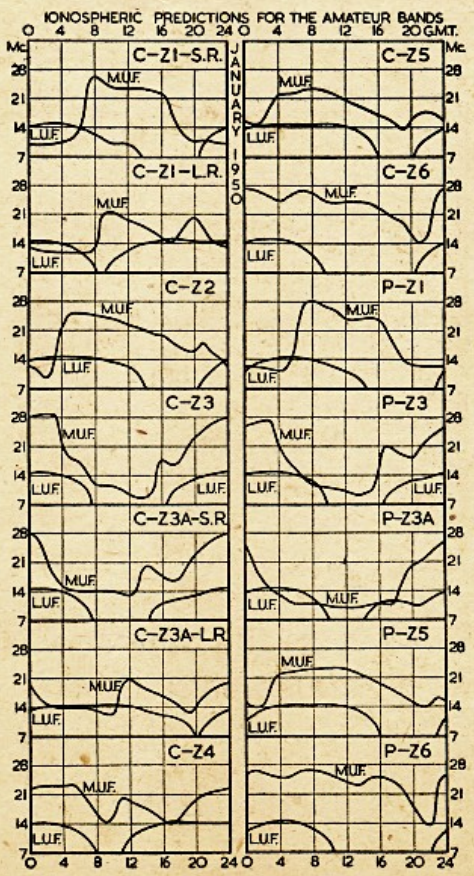
The Perth charts are similar to those based on Canberra.

QUIZ

The Prediction Service welcomes comments on the accuracy of its predictions. In particular, answers to the following questions on the Perth-San Francisco circuit would be useful.

1. Was the 7 Mc. band workable from 1000 to 1600 hours G.M.T.?
2. Was the 14 Mc. band workable from 1600 to 2000 hours G.M.T.?
3. Was the 28 Mc. band workable for several hours around midnight G.M.T.?

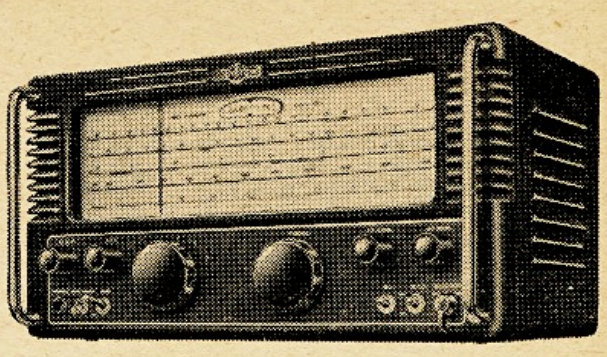
Answers to the Quiz should be sent to the W.I.A. and should, if possible, refer to consistent results obtained on the majority of days in the month.



Heralding

THE GREATEST AMATEUR COMMUNICATIONS RECEIVER OF ALL TIME . . . the

EDDYSTONE "750"



The "750" is a magnificent model—an entirely new, ultra-modern Amateur Bands Receiver with a host of outstanding features. It is the successor to the famous "640"—thousands of which are in use the world over, including the U.S.A.

Featuring:—

- Coverage 480 Kc/s. to 30.5 Mc/s.
- 200:1 ratio dial reduction.
- Modern miniature valves.
- Three watts of audio.
- Double detection superheterodyne (1,600 and 85 Kc/s.).
- Stabilised H.T. supply.
- Provision for external S meter.
- Variable selectivity I.F's.
- New and improved dial provides ample band spread on Amateur Frequencies.

AVAILABLE EARLY 1950

Place your order NOW with your Distributor

Further details from:

- VICTORIA: J. H. MAGRATH & CO., 208 Little Lonsdale Street, Melbourne.
- WILLIAM WILLIS & CO., 428 Bourke Street, Melbourne.
- N.S.W.: JOHN MARTIN PTY. LTD., 116-118 Clarence Street, Sydney.
- QUEENSLAND: CHANDLERS PTY. LTD., Corner Albert and Charlotte Streets, Brisbane.
- WESTERN AUSTRALIA: CARLYLE & CO. LTD., Hay Street, Perth, and 397 Hannan Street, Kalgoorlie.
- ATKINS (W.A.) LTD., 894 Hay Street, Perth.
- SOUTH AUST.: GERARD & GOODMAN LTD., 192-196 Rundle Street, Adelaide.
- TASMANIA: W. & G. GENDERS PTY. LTD., 53 Cameron Street, Launceston, and Liverpool Street, Hobart.
- LAWRENCE & HANSON (ELECTRICAL) PTY. LTD., 120 Collins Street, Hobart.
- NOYES BROS. LTD., 36 Argyle Street, Hobart.

Australian Factory Representatives: R. H. Cunningham & Co., 62 Stanhope St., Malvern, Vic. (UY 6274)

BELLING LEE

This is one of the famous old British names in radio and one that you have seen frequently advertised in English journals and therefore requires no introduction from us.

It is our policy to bring to the amateur and professional radio field in Australia only quality products in which an investment means a financial saving and an insurance of faithful and efficient performance. For this reason we are proud to mention a few of the good things made by Belling & Lee Ltd. They are obtainable from all good Eddystone distributors throughout Australia.

AERIALS.—The SKYROD anti-interference aerial is 18 feet in length, made in five sections and is complete with fittings for lashing to a chimney or to a mast head. Erected on a chimney or mast, this aerial is well free of man-made interference and vastly improves the signal-to-noise ratio.

"ELIMINOISE" is the name given by Belling Lee to a system of extremely efficient transformers and feeder cables for the eradication of noise. A complete kit is available for use with horizontal dipoles or the SKYROD vertical aerial. The kit consists of the aerial transformer L306, which is mounted right at the aerial feed point. This unit possesses a balanced RF transformer complete with Faraday screen between windings for the reduction of capacitive pick-up. The receiver "ELIMINOISE" (L307), which is mounted right at the receiver input terminals, is a similarly made RF transformer and is balanced to respond evenly over the 10-50 metre and the 200-2000 metre bands.

L1221 feeder is a 60 to 75 ohm balanced twin shielded RF cable used in conjunction with L306 and L307 above. No pick-up of noise can occur between the aerial and the receiver with this polythene insulated and screened with copper mesh type of cable.

The Belling & Lee aerial systems are available as either complete kits or may be purchased as components as desired. Noise reduction of 10 db or better is possible with the "ELIMINOISE" system and the automatic balancing of impedances adds further gain to any communication receiver.

—R. H. CUNNINGHAM AND COMPANY, MELBOURNE.

The "Lenfo" Series Phased Array

BY LEN JACKSON† AND C. GIBSON,* VK3FO

With the advent of greater activity on the v.h.f. bands, and the controversy on antenna systems, we discussed and contemplated using a type of array or beam that could be easily constructed and which would require no tuning or pruning, as is necessary in the more conventional types of antenna.

To this end, the writers got together and evolved the "Lenfo" (as aptly named by Charlie, VK3BH). A lot of nights were spent with slide rule, paper, and visits to the Public Library, the results being well worth all the trouble.

When the system was all worked out, discussions with VK3EN and VK3EM resulted in their agreement with the theory, so it was decided to build up an experimental array and try it out.

VK3KE (Jim) kindly put his shack and gear (he also mowed his back lawn for the occasion) at our disposal, for which our thanks are hereby recorded. So now let's to the theory of this array.

This type of beam was first developed by Franklin, of the Marconi Company, being originally only single sided, with one quarter wavelength radiators. It was further developed by the late Howard Love (VK3KU), who duplicated it on the opposite side, giving it its present appearance of a number of folded dipoles joined centre to centre by lengths of feeder.

In the original form, a 300 ohm terminating resistor was necessary to prevent standing waves on the feedlines. **In fact the whole system operates without standing waves on any part of it.** This terminating resistor was retained by VK3KU.

We decided to further experiment with this type of beam and found it possible to eliminate the terminating resistor and produce the same effect by terminating in a folded dipole of 300 ohm impedance. The advantage of this is obvious, since the resistor dissipates 3 db of the total power, whereas the dipole converts this into useful radiation.

The matching stub on the front of the array was also eliminated, the array being fed by 300 ohm ribbon, connected directly into the first element. A twin lamp indicator fails to give any indication of standing waves on the feeder.

The system used at this station consists of a three element series phased array, terminated in a folded dipole, giving a total of four elements.

Field strength measurements were first made on this array, in conjunction with VK3KE, with VK3EM a very interested observer (unfortunately VK3EN was detained at work).

The forward gain over a folded dipole proved to be at least 10 db, with a front-to-back ratio of better than 20 db. These figures could not even be approached with a conventional two or three element parasitic beam. These figures have subsequently been confirmed by "S" meter readings in a large number of contacts.

As the theory of this array has been well covered by a pervious article in this magazine (Series Phased Arrays‡), it is felt that it is not necessary to go into full details of the theory here, but a few points may be of interest.

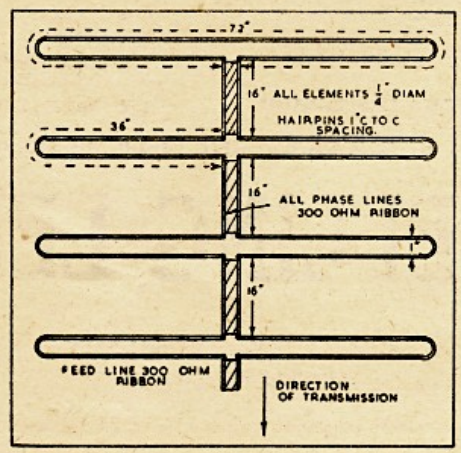
As the system operates without standing waves on any part of it, except the terminating folded dipole, **ordinary calculations for antenna lengths do not hold, and it is necessary to use transmission line theory in determining the lengths of the elements.**

The lengths of the elements should be measured around each folded half, and not from end to end. The length of the folded half is given by the length of a half wavelength in free space multiplied by the velocity factor of the element as a transmission line. For the usual rod or tube form of construction, this velocity factor is about 0.9, giving as the length of the half element—

$$\frac{492 \times 0.9}{\text{Freq.}}$$

The length of the transmission line sections is one-quarter wavelength in free space, multiplied by the velocity factor of the line. If 300 ohm ribbon is used, this becomes $\frac{246 \times 0.8}{\text{Freq.}}$, or if open wire line is used, $\frac{246 \times 0.9}{\text{Freq.}}$

The use of 300 ohm ribbon is recommended, as this is made to very fine tolerances and there is less likelihood of impedance variations than in open wire lines.



Dimensions for 6 Metre Beam

Dimensions round ½ folded dipole, 8′ 6″. Phasing line, 300 ohm ribbon, 3′ 9″.

When the first array was built, to the measurements given in the diagram, many predictions were made that the resonant frequency would be well out of the top of the 144 Mc. band, however, the resonant point is found to be about 146 Mc., thus confirming the soundness of the theory. Hence we strongly recommend that these dimensions be used by anyone who contemplates building this array.

Since the resonance is very broad, and the performance does not change over the entire band, it is not necessary to cut the elements for the transmitting frequency. An array cut for 146 Mc. will work equally well on any part of the band. It is not necessary to stick to four elements, although this is the practicable minimum, but elements can be added indefinitely, without any change in impedance matching or dimensions, with continued improvements in performance.

Elements must be kept to an even number, however, to obtain a high back-to-front ratio, as the radiation cancels from each pair of elements in the backward direction. An odd number of elements would therefore leave one element, whose radiation was not cancelled to the back.

At the time of writing VK3KE and VK3EN have erected six element arrays and while it is too early yet to gauge the performance accurately, the forward gain and back-to-front ratio show appreciable improvement over the four element array.

The diagram shows dimensions and lengths for a 144 Mc. array and calculated dimensions for six metres. It has not been tried at the time of writing, but by the time this appears in print the 6 metre array should be in operation at VK3FO.

We would stress that insulation of the elements at these frequencies is of utmost importance, as r.f. is costly to generate and easily lost, so we want all the energy into the array. Keep the feed line clear of all metal work, guy wires, iron roofs, etc., as close proxminity to these objects will upset the pattern of the array, and also impair the efficiency of the whole system.

Outstanding results have been obtained by VK3KE and VK3BH using the "Lenfo;" VK3KE worked VK3ANW at Mount Dandenong with 3 watts input and the "Lenfo" only five feet high. Charlie, VK3BH, 16½ miles south-east of Melbourne also worked into Geelong on 144 Mc. VK3JO, also using this type of array, with about 1 watt input, is having very good results.

In conclusion we would appreciate reports of tests conducted with this array and other types of beams, so chaps please let us have your opinions as to how good or bad the "Lenfo" is.

† 8 Austin Street, Bentleigh, S.E.14, Vic.
* 424 Centre Rd., Bentleigh, S.E.14, Vic.

‡ "Amateur Radio," May, 1948, page 3.

FIFTY MEGACYCLES AND ABOVE

Compiled by J. K. RIDGWAY, VK3CR.

Important news for 50 Mc. enthusiasts! News is to hand that the following 50 Mc. stations are maintaining a watch for VK stations:—

VR2BC (Suva), 50.9 Mc.; YV5AC, 50.2 Mc.; YV5AE, 50.05 Mc.; YV5BX, 50.4 Mc.; HC2OT, CE1AH, OA4AG, and OA4BC. No frequencies are available for the four last mentioned stations.

50 Mc. ACTIVITY

NEW SOUTH WALES

50 Mc. is really open now and many excellent contacts have been had with KH6 and ZL. ZLs have W contacts and many KH6. Ere these notes are printed, VK-W-J, etc., will most probably be contacted. VK4 and VK5 have been worked by VK2 but no really good Interstate opening so far.

Due to lack of support, the November V.H.F. Meeting, held on the 11th, had to be chaired by a Council member. A "quizz session" filled in. Lectures are definitely the draw and this will be well catered for in January when a lecture by 2UD Bob Archer, on "Practical Application of Noise Generators" will be delivered.

The Field Day was well attended and approximately 130 were present. The hidden transmitter was found after some difficulty. The start was well organised this time and the transmitter was found after about one hour of searching by a composite party ending in a race, foot style. The winner is to be announced. 2NS guessed the crystal oscillator frequency. Mrs. Collett (2RU's XYL) being a very close second.

New stations on 50 Mc. include 2SY, 2NQ, 2DV, 2ABH on super mod., 2XO North Coast. 2BW visited Sydney during last month and it is hoped to do a 6 metre relay as Alf is in Wagga.

The 28th saw the band open for about 4 hours to ZL and many contacts were had from Sydney to KH6. The ZLs were about even after midnight New Zealand time. JA2AZ was heard at 1230 hours S7 by VK2ANF in Sydney on 23/11/49.

VICTORIA

50 Mc. is providing VK3 stations with many thrills. On Sunday 4th December, all States with the exception of VK5 were heard and worked. Several Melbourne stations worked their first VK6 in the morning, signals being fairly good both ways. The elusive (for Victoria) VK7s made one of their rare appearances and though signals were not good in Melbourne, 3RR and 3ACL, operating from 3ACL's location in Red Hills, made a very good contact with 7XL.

November has proved an interesting month for 50 Mc. enthusiasts in VK3. There have been a number of good DX openings and plenty of local and country stations on the band. With regard to DX openings, these were as follows:—22nd 1300-1445 and 1820-2015 hours, the band was open to VK4, the best signals coming in during the daytime opening. 26th: 1840-2000 hours good opening to VK4. 27th: 1345-1700 and 1925-2000 hours, the VK4s were rather patchy. 30th: Very good opening to ZL from 1315-1410 hours; ZLs 1HY, 1NT, 1HP, 1UZ, 1VW, and 1QS being worked by VK3TH and VK3IM. Interstate signals have been heard briefly without contacts actually being made.

Several new stations have appeared on the band, the first being 3AKE, of Geelong. He is using a converted 522 gear and a two element beam and has worked a number of Melbourne stations and some VK4s. 3DN has also been on using a rig consisting of 6V6 c.o., 6V6 doubler, 6V6 quadrupler, and 815 final. Doug has yet to put up an outdoor antenna, but should put out a good signal when he does so. 3FO is using 40 watts to an 807. Col also has no 50 Mc. antenna at the time of writing, but is building a four element series phased beam which will go up 40 feet.

3AFN, of Black Rock, is using an EF39 c.o., EL32 doubler, VT501 doubler, into the dipole antenna, quite an unusual set-up. Thus it is obvious that quite a diversity of gear can be used to put a signal on the 50 Mc. band; how about a few more having a look in the junk box and getting together the necessary gear for a 50 Mc. transmitter.

On the 13th November, 3CI operated portable six miles south of Tatura and worked a number of Melbourne stations with good signals although some QSB was apparent. Location was in the tower of an old house, approximately 100 feet above the ground. This portable outing will be 3CI's last appearance on the band under this call sign. Syd has now moved to VK5 and the VK3 v.h.f. gang wish him all the best and will be looking for him on six and two. Syd's v.h.f. work has been greatly appreciated by all Victorian stations. Although hampered by a poor home location, Syd went out portable again and again and really put Mt. Fatigue and Foster North on the v.h.f. map. Thanks for doing a fine job Syd.

QUEENSLAND

There has been very great activity on this band during the past month. Southern States have broken through on several occasions. At the time of writing a rumour is circulating that a VK4 has worked South America on this band, but at present we have no confirmation of this.

On 5th November 4XN worked 3EF, 3DA, 3ZL and 7XL. 4HD worked 3RR, 5HD, a number of VK3s and heard 5DC. 4CU worked 7AB, 3RR, 3UI, 3BW, 5HD. Other VK4s who worked VK3s were 4RY and 4RT. 6th November, 4HD worked 5RT on c.w.

14th November between 2030 and 2055 hours, 4FN worked 5CL, 5JN, 5GB, 5QR, 5GF and heard 2OH. Others working VK5s were 4CU, 4XN, 4RY and 4ES. 4FN also heard 4CU and 4XN. 15th: a number of VK5s were heard but no QSOs resulted. 19th: at 2000 hours 4ES and others in Brisbane worked VK5s and ZLs. 22nd: 4XN, 4HR, 4RY and 4HD worked VK3 stations.

26th November: Several VK5s and VK3s were worked between 1845 and 2000 hours by 4XN, 4CU, 4BT, 4ZU, 4RY, 4HD, 4FN, and 4HR. Another break through was made on the morning of the 27th but no details are to hand.

30th October was a red letter day for VK4 as VK4RY at 1402 hours worked KH6PP.

WESTERN AUSTRALIA

So far, there are no reports to hand of any Sporadic E or regular F2 layer openings on the 6 metre band, unless 6WG, of Albury, has any. No notes to hand from 6WG, but I believe he has experienced some sort of activity this season. 6FC, 6BO, 6DW, 6LW, 6RK, 6GS have all been keeping a close watch on the band for many weeks now. Nothing broke through from anywhere as a result of auroral activities which were reported as having occurred during the early hours of Sunday, 20th November. Close watch was kept during the whole of that day with signals being beamed to the south, north and east. It was noticed that signals on the lower frequency bands were absent, especially the 10 metre band, which was as quite as a country churchyard at midnight.

At about midday on Wednesday, 23rd November, 6FC heard the Adelaide radio range beacon on 33.8 Mc., indicating a sharp rise, to well over 40 Mc., in the m.u.f. Adelaide is little more than about 1700 miles from Perth, if it is that, via the great circle route. However, AD Range has not been heard again since.

Notwithstanding the lack of DX outside the State, the boys are steadily improving their gear and now two-way c.w. QSOs between 6BO, 6FC in the metropolitan area, and 6GS Harvey (about 85 miles to the south) are becoming a regular feature. On the evening of 22nd November, both 6FC Perth and 6DW Bruce Rock (150 miles east of Perth) made a two-way c.w. contact. This is the longest two-way 6 metre contact, I believe in VK6. Signals peaked at times to S5, but QSB was severe. However, 6FC, unfortunately, could not read a signal report from 6DW, and only this was necessary for an exchange of QSL cards. 6DW was using an input of 100 watts to a three element beam, while 6FC was using about 60 watts, also to a three element beam. 6FC is wasting no time in adding the fourth element to that beam. This would have made the contact a QSO.

It is quite obvious that success over long distances in this band depends upon an efficient aerial —three element beam at the very least, and then making sure that your power really gets to the aerial with the minimum of losses. Even then, an r.f. output from the transmitter of at least 30 watts is necessary. The more the better, of course. However, the addition of the 4th element to the antenna makes a lot of difference, as was proved when 6BO added a 4th element to his beam. Still better results would doubtless be obtained with even higher gain arrays.

TASMANIA

VK7PF reports reception of a KH6 signal on 36 Mc. approximately. Makes him hopeful that he might be able to do the same thing just 14 Mc. higher sometime. Says nothing doing on six apart from local QSOs between 7LZ and 7BQ. As for the south, same state of affairs seems to exist. Only inhabitants appear to be f.m. signals from b.c. receiver local oscillators, b.c. station harmonics, the local power leaks "and" VK7AJ and VK7DH. Surely the Editor would not be so unkind as to omit the "and" preceding VK7AJ.

7AJ has pulled the band-switching out of his receiver, substituting plug-in coils and says it has made a vast difference to sensitivity on six. Athol is considering a pair of three element beams and permanently aiming the whole works at KH6.

144 Mc. DOINGS OF THE MONTH

NEW SOUTH WALES

Considerable interest is being shown in this band mainly by DX minded crystal control stations. Stacked antenna are more common than any and definitely give a couple of S points of "readability." 2ABC is a recent stacked-antenna aspirant—has 1143 delivering the ergs. Are RL7s (VR136) the finest r.f. pentode available to Hams?

VICTORIA

This band is rapidly increasing in population and once again it is possible to report the advent of some new stations. 3RT is using 10 watts to a 2C26 modulated oscillator, super regen receiver, and twin three beam and is putting out a good stable signal. 3JE has also been on, but details of gear not to hand yet. 3DH is using a 6J6 oscillator and quadrupler, 6BA6 doubler, 6J6 doubler, 832 final, with a 6J6 super regen. Both 3DH and 3VM are arranging their gear for mobile work so some interesting contacts should be forthcoming.

(Continued on Page 24)

Abstracts from Overseas Magazines

"SHORT WAVE MAGAZINE," SEPTEMBER, 1949—

P. 498: **"Top Band Cabinet Transmitter;"** J. N. Walker, G5JU.—1.7 Mc. Transmitter. First of a series of fully detailed constructional articles using only branded parts so that the exact construction can be repeated by all interested.

P. 506: **"Indoor Beam for Ten;"** R. W. Rogers, G6YR.—Rotating three element beam with the ends of the elements bent down. Installed in a loft.

P. 509: **"More on the Grid Dip Oscillator;"** R. F. Stevens, G2BVN.

P. 511: **"Surplus V.F.O. Unit;"** J. N. Roe, G2VV. —Uses type M1-19467-A.

P. 514: **"Double Superhet for Ten;"** A. B. Wright, G6FW.—Continued from August.

"WIRELESS WORLD," SEPTEMBER, 1949—

P. 326: **"Valve Megohmmeter;"** W. H. Cazaly.—Linear scale, two ranges covering 5,000 ohms to 5 megohms.

P. 331: **"Audio Signal Generator, Part 2;"** M. G. Scroggie.—Description of an elaborate signal generator.

P. 335: **"Eddystone Model '680';"** Test Report.—Full description of the "680." Circuits of the r.f. coupling system, crystal filter, detector, a.v.c., noise limiter, and S meter.

P. 346: **"Electronic Circuitry;"** J. McG. Sowerby. —(i) RC oscillators, e.g. a Wien bridge RC oscillator. (ii) Cathode coupled amplifiers and phase splitters.

P. 349: "Generalised Graphs;" "Cathode Ray."

"RADIO AND TELEVISION NEWS," SEPT., 1949—

P. 37: **"A Band-Switching V.F.O. Exciter Unit;"** P. V. R. Drenner, W0LQS.—An Australian might call this 14 valve gadget a band-switching transmitter. Is standard handbook design of v.f.o., plus doubler string, n.b.f.m. and 807 final.

P. 49: **"Self Modulating the 829B;"** O. L. Woolley, W0SGG.—Half the 829B acts as an r.f. amplifier. The other half acts as audio amplifier, the common screen and cathode providing the modulation coupling.

P. 50: **"A Pocket Signal Tracer;"** J. L. Barber. —No batteries. Uses 1N34 crystal rectifier.

P. 52: **"Sweep Generator Adjustment of Transmission Lines and Antennae;"** J. A. Cornell.—Accurate impedance matching with sweep generator and c.r.o.

P. 54: **"The Beginning Amateur, Part 8;"** R. Hertzberg, W2DJJ.—Discussion on test equipment.

P. 57: **"Shielding Against T.V.I.;"** P. S. Rand, W1DBM.

P. 61: **"Modern Television Receivers;"** M. S. Kiver.—Vertical sweep systems of typical American commercial receivers.

P. 64: **"Build This Experimenters' Power Supply;"** R. P. Turner, K6AI.—Conventional power supply plus pair of 6L6s as electronic variable dropping resistors. If you don't know this useful idea, try it some time. Take a 6L6 (or 807, or 6V6, etc.), connect plate and screen together to form a triode. Put h.t. in at the plate and take it out at the cathode. Connect a 100,000 pot (linear for preference) from cathode to ground. Connect grid to moving contact of pot. Varying the pot., varies the bias on the grid, varying the drop across the tube and so the output voltage. If one tube won't stand the current drain, put more in parallel. A filter condenser across the output is useful. Connect filament winding to cathode potential.

P. 67: **"The Television Receiving Antenna;"** B. V. K. French.—Many types of v.h.f. antennae.

"CQ," SEPTEMBER, 1949—

P. 13: **"The Ultimate in Converters;"** J. E. Stacey, W1KIM.—Very good article on the cascade circuit. Discusses the best tubes to use (6AK5 triode into 6J4 or half 6J6), together with full circuit details of the ultimate (almost) in low noise converters for 28, 50, 144 and 220 Mc.

P. 20: **"A Composite Chart of Standard Colour Codes;"** A. Shaffer.

P. 23: **"Data on the BC610 Tank Coils;"** F. Black, W2ESO.

P. 25: **"Multi-Band Rotary;"** B. Haner, W2FBA. —33 ft. elements which act as half wave radiators on 14 Mc. and as two half waves in phase on 21 and 28 Mc. The parasitic elements have stubs in the centre whose effective length is changed by relays. The driven element can be switched to three different networks so as to operate flat feeders on all bands.

P. 29: **"Winning Three Falls from Gorgeous George;"** W. I. Orr, W6SAI.—Case history of a successful 14 Mc. T.V.I. house cleaning job.

P. 31: **"On a Cycle Right For You;"** W. H. Anderson, VE3AAZ.—How to operate transformers, selsyns, relays from a supply whose frequency is different from that for which the unit was designed.

P. 32: **"Hobby for the Handicapped;"** H. S. Brier, W9EGQ.—Actual cases of the value of Amateur operating as a healer.

P. 35: **"Screen Grid Modulating the Command Rigs;"** R. R. Hall, W0CRO.—Standard screen modulation applied specifically to a Command transmitter.

"QST," SEPTEMBER 1949—

P. 13: **"A Simplified Circuit for Audio Image Rejection;"** G. Grammer, W1DF.—Applies audio phasing principles to c.w. beat note reception to remove the audio image. This, together with a peaked audio amplifier, should do as good a job as a crystal filter.

P. 20: **"The Gamma Match;"** H. H. Washburn, W3MTE.—To match co-ax to the driven element of a beam, half a T match serves.

P. 22: **"450 Watts on V.H.F.;"** C. V. Chambers, W1JEQ.—6AR5 tritet oscillator, 6AR5 doubler, 832A amplifier or tripler, 832A 144 Mc. amplifier driving p.p. 465A amplifier. The final amplifier tank is novel. On 144, it acts as a quarter wave linear tank. On 50 the shorting bar across the lines is removed and a coil plugged in.

P. 29: **"A 1950 V.F.O. Exciter;"** B. Goodman, W1DX.

P. 48: **"Vertical Beams on 14 Mc.;"** A. D. Mayo, W5DF.—Results obtained with driven element plus one parasitic element.

P. 60: **"Hints and Kinks."**—(i) Low-power AC-DC transmitter. (ii) Broadcast band coverage with the BC348Q. (iii) Cure for "Talk-back" in the BC610. (iv) Lock on for the T17B hand microphone. (v) Uses for the SCR274 dynamotor.

"CQ," OCTOBER, 1949—

P. 11: **"T.V.I. Free Rig for 10;"** M. Seybold, W2RVI.—The length to which shielding is carried has to be seen to be believed.

P. 15: **"Gliding the Gold-Plated Special;"** J. Kirk, W6DEG.—Using the National continuous tuning all-band tank.

P. 18: **"Neglected Out-Phasing System of Modulation;"** W. H. Hartman, W7AF.—The output from the basic oscillator is split into two channels with a small phase shift between them. Each channel is phase modulated by the audio and then amplified up to the desired power. The outputs of final amplifier of each channel are combined and fed to the antenna. The audio equipment is simple, the power economy is high, but since the r.f. section must be in duplicate, the use of the system for Amateurs is doubtful.

P. 27: **"Hobby for the Handicapped, Part 2;"** H. S. Brier, W9EGQ.

P. 30: **"Inside the Shack and Workshop."**—(i) R.F. gain control for the S41. (ii) Improving the Collins 75A noise limiter; substitutes 12H6 for 6H6; operating the 12 volt filament on 6 volts reduces hum pickup. (iii) Conversion of BC453 to the broadcast band. (iv) Low voltage tap on Bridge rectifiers; from the centre tap of the transformer supplying a bridge rectifier can be drawn a rectified voltage approx. half that of the main output.

P. 31: **"Selenium Supply;"** L. V. Broderson, W6OLV.

"WIRELESS WORLD," OCTOBER, 1949—

P. 362: **"Magnetic Recording Technique;"** D. Roe.

P. 365: **"High Quality Amplifier—New Version;"** D. T. N. Williamson.

P. 370: **"Microwave Lenses;"** C. Susskind.

P. 389: **"Smoothing Circuits, Part 1 RC;"** "Cathode Ray."—The good oil on RC filters.

P. 395: **"Electronic Circuitry;"** J. McG. Sowerby. —(i) Direct current stabilisers. (ii) Neutralising the cathode coupled phase splitter for improved high frequency response.

P. 398: **"Vented Loudspeaker Cabinets;"** C. T. Chapman.

P. 401: **"Reflex Valve Voltmeter;"** M .G. Scroggie.—Single valve voltmeter with 5, 20 and 50 volt ranges and medium stability.

P. 405: **"Properties and Uses of Negative Temperature Coefficient Resistors;"** "Thermistors."

FEDERAL, QSL, and DIVISIONAL NOTES

Federal President: W. R. Gronow, VK3WG; Federal Secretary: W. T. S. Mitchell, VK3UM, Box 2611W, G.P.O., Melbourne.

NEW SOUTH WALES

Secretary—Geo. Cameron (VK2GC), Box 1734, G.P.O., Sydney.

Meeting Night.—Fourth Friday of each month at Science House, Corner Gloucester and Essex Sts., Sydney.

Divisional Sub-Editor.—L. D. Cuffe, VK2AM, 14b Watson Street, Neutral Bay, N.S.W.

Zone Correspondents.—**North Coast and Tablelands:** P. A. H. Alexander, VK2PA, Hill St., Port Macquarie; **Newcastle:** H. Whyte, VK2AHA, Vale St., Birmingham Gard., Newcastle; **Coalfields and Lakes:** H. Hawkins, VK2YL, 27 Comfort Ave., Cessnock; **Western:** G. J. Russell, VK2QA, 116 Bogan St., Nyngan; **South Coast and Southern:** R. H. Rayner, VK2DO, 42 Pettit St., Yass; **Western Suburbs:** A. C. Pearce, VK2AHB, 48 Harrabrook Ave., Five Docks; **Eastern Suburbs:** H. Kerr, VK2AX, No. 4 Flat, 144 Hewlett St., Bronte; **North Sydney:** L. D. Cuffe, VK2AM, 779 Military Rd., Mosman; **St. George:** J. A. Ackerman, VK2ALG, 32 Park Rd., Carlton; **South Sydney:** V. H. Wilson, VK2VW, Cr. Wilson St. and Marine Pde., Maroubra.

VICTORIA

Secretary.—C. C. Quin, VK3WQ.

Administrative Secretary.—Mrs. O. Cross, Law Court Chambers, 191 Queen St., Melbourne, C.1.

Meeting Night.—First Wednesday of each month at the Radio School, Melbourne Technical College.

Zone Correspondents.—**North Western:** R. E. Trebilcock, VK3TL, 122 Victoria St., Kerang; **Western:** C. C. Waring, VK3YW, 12 Skene St., Stawell; **South Western:** W. H. Ross, VK3UT, Ballangeich, via Warrnambool; **North Eastern:** J. A. Miller, VK3ABG, "Erinvale," Avenel; **Far North-Western Zone:** Harry Dobbyn, VK3MF, 42 Walnut Ave., Mildura; **Eastern Zone:** Mrs. P. M. Churchward, VK3US, "Shirley," Red Hill.

WI BROADCASTS

All Amateurs are urged to keep these frequencies clear during, and for a period of 15 minutes after, the official Broadcasts.

VK2WI.—Sundays, 1100 hours EST, 7196 Kc. and 2000 hours EST, 50.4 Mc. No frequency checks available from VK2WI. Intra-State working frequency, 7175 Kc.

VK3WI.—Sundays, 1130 hours EST, simultaneously on 3580 and 7196 Kc. and re-broadcast on 50 and 144 Mc. bands. Intra-State working frequency 7185 Kc. Individual frequency checks of Amateur Stations given when VK3WI is on the air.

VK4WI.—Sundays, 0900 hours E.S.T. simultaneously on 3750 Kc., 7196 Kc., 14342 Kc., 52.4 Mc. and 144.138 Mc. Frequency checks are given two nights weekly, and the times are announced during Sunday broadcasts. 7065 Kc. channel is used from 1000 to 1030 hours each Sunday as VK4 query service to VK4WI.

VK5WI.—Sundays, 1000 hours SAST, on 7196 Kc. Frequency checks are given by VK5DW on Friday evenings on the 7 and 14 Mc. bands.

VK6WI.—Saturdays 1400 hours, Sundays 0930 hours WAST, on 7196 Kc. No frequency checks available.

VK7WI.—Second and Fourth Sundays at 1000 hours E.S.T. on 7196 Kc. No frequency checks are available.

QUEENSLAND

Secretary.—W. L. Stevens, VK4TB, Box 638J, G.P.O., Brisbane.

Meeting Night.—Last Friday in each month at the Y.M.C.A. Rooms, Edward Street, Brisbane.

Divisional Sub-Editor.—F. H. Shannon, VK4SN, Minden, via Rosewood.

SOUTH AUSTRALIA

Secretary.—E. A. Barbier, VK5MD, Box 1234K, G.P.O., Adelaide.

Meeting Night.—Second Tuesday of each month at 17 Waymouth St., Adelaide.

Divisional Sub-Editor.—W. W. Parsons, VK5PS, 483 Esplanade, Henley Beach.

WESTERN AUSTRALIA

Secretary.—W. E. Coxon, VK6AG, 7 Howard St., Perth.

Meeting Place.—Padbury House, Cnr. St. George's Ter. and King St., Perth.

Meeting Night.—Watch the Monthly Bulletin.

Divisional Sub-Editor.—George W. Ashley, VK6GA, 33 Mars Street, Carlisle, Western Australia.

TASMANIA

Secretary.—R. D. O'May, VK7OM, Box 371B, G.P.O., Hobart.

Meeting Night.—First Wednesday of each month at the Photographic Society's Rooms, 163 Liverpool St., Hobart.

Divisional Sub-Editor.—Capt. E. J. Cruise, VK7EJ, Anglesea Barracks, Hobart.

Northern Correspondent: C. P. Wright, VK7LZ, 3 Knight St., Launceston.

FEDERAL

DX C.C. LISTING

As there appears to be several anomolies in the present Rules, it is anticipated that at the 20th Convention, a complete airing will be given, so if you have any grouches or constructive comments now is your opportunity to send them to your Divisional Council for inclusion on the Agenda.

PHONE		
VK3JD (1)	36	130
VK6RU (2)	37	125
VK6KW (4)	37	124
VK3BZ (3)	36	120
VK3EE (10)		113
VK6DD (6)		112
VK4JP (8)		102
VK3LN (11)		102
VK3JE (7)		100
VK4KS (9)		100
VK3IG (5)		100
C.W.		
VK3BZ (6)	40	157
VK3CN (1)	40	143
VK3VW (4)	39	134
VK4EL (9)	39	134
VK2QL (5)	40	132
VK3KB (10)	39	128
VK3EK (3)	39	121
VK4HR (8)	40	119
VK4RF (11)	35	118
VK2EO (2)	40	115
VK3FH (15)	37	115
VK4DA (7)	38	112
New Member—		
VK3NC (19)		101
OPEN		
VK3BZ (4)	40	178
VK6RU (8)	38	161
VK2DI (2)	40	159
VK3JE (12)	39	153
VK3HG (3)	40	146
VK4HR (7)	40	146
VK6KW (13)	39	144
VK3MC (5)	39	138
VK3KX (1)		135
VK4EL (10)	39	134
VK2ADE (28)		133
VK3OP (19)		128

An application for Open membership has been received from VK7KB and is being checked.

COUNTRIES LIST

Elsewhere in this issue will be found the latest list of DX Countries and the current prefixes. Submit your cards for DX C.C. in that order.

RADIO CONTROL OF MODELS

Another frequency band has been allotted for the radio control of models, namely, the 27 Mc. i.s.m. band. These bands are now as follows:—

26.957 to 27.282 Mc.
40.66 to 40.70 Mc.

A special permit is required to operate models on these two channels, and special application must be made to the Chief Inspector (Wireless) stating details of proposed experiments, type of equipment and circuit to be used, and precise location in which to be operated. These applications are not restricted to Amateurs, but other details must be supplied if the applicant is under age. Licenced Amateurs may use 144 Mc. and higher frequencies without any additional permit.

ZS "GENTLEMEN'S AGREEMENT"

Still another Society to add to the list of those endeavouring to equitably allocate the bands between Phone and C.W. is the S.A.R.L. They have advocated the following distribution:—

3500— 3600 Kc. C.W. only.
3600— 4000 Kc. Phone only.
7000— 7050 Kc. C.W. only.
7050— 7100 Kc. C.W. and Phone.
7100— 7150 Kc. Phone only.
14000—14100 Kc. C.W. only.
14100—14350 Kc. Phone only.
21000—21150 Kc. C.W. only.
21150—21450 Kc. Phone only.
28000—28200 Kc. C.W. only.
28200—29700 Kc. Phone only.

AMATEUR STATIONS ABOARD SHIPS

As at present laid down in the P.M.G's Handbook, para. 50, Amateur Stations may be operated aboard Australian ships in Australian waters only. This has now been amended so that a station so licenced may now do so anywhere in the world, provided that when in the port or anchored to any wharf or pier of any other administration, the equipment will not be operated. The Handbook will at a later date be amended to this effect.

W.I.A. ACTIVITIES CALENDAR

Jan. 14-15: B.E.R.U. C.W. Contest.
Jan. 21-22: B.E.R.U. Phone Contest.
Jan. 28-29: W.I.A. National Field Day Cont. and B.E.R.U. C.W. Contest.
Jan. 31: Membership Rolls of each Division due at F.E.
Feb. 19: 20th Convention Items due at F.E.
Feb. 28: Convention Per-Capita due with F.E. End of fiscal year of Divisions.
Mar. 10: Agenda for 20th Convention issued.
Mar. 17: Annual Per-Capita due not later than this date.
Mar. 31: End of fiscal year for F.E.

SLOW MORSE TRANSMISSIONS

The following transmissions from the official W.I.A. stations are given on 3,504 Kc. on the days and times shown below:—

Sunday—VK3WI, 2030 to 21000 hours E.A.S.T.
Monday—VK2WI, 2000 to 2030 hours E.A.S.T.
Tuesday—VK4WI, 1930 to 2000 hours E.A.S.T.
Wednesday—VK6WI, not operating at present.
Thursday—VK5WI, 1930 to 2000 hours E.A.S.T.
Friday—VK7WI, 2030 to 2100 hours E.A.S.T.

NATIONAL FIELD DAY CONTEST

Elsewhere in this issue appears the Rules of the 1950 W.I.A. National Field Day Contest to which some minor changes have been made. Last year's effort was patronised fairly well, but we cannot but feel that it does not yet enjoy the popularity it merits. Here is your chance to test your portable gear under portable conditions, and at the same time compete for a money order for equipment or trophy.

The v.h.f. boys are also catered for, so here's their chance also for a pleasant outing and a furthering of their experimenting. Let's make this N.F.D. a bumper one!

— . . . —

FEDERAL QSL BUREAU

RAY JONES, VK3RJ, MANAGER

Under date of 17th November, 1949, Noel Roberts, ex-VK9NR, writes: "I am leaving Norfolk Island in a few says for New Zealand where I will be stationed at Christchurch for a few months before shoving off for Samoa. I will be on from Samoa, of course, under a ZM6 call sign but do not know whether I will get on from the Christchurch QTH. Will be sending a stack of cards along soon as I expect a new bunch from the printers any day now, so ask the boys to be patient. Would you please pass the word along asking stations to put the correct date-time on their cards. I get quite a few with wrong dates and at first suspect them as "tryouts" but sometimes fluke the QSO in the log a long way off the date shown on the card. I feel sure some blokes may have missed a card on this account as I am careful in checking that a QSO did actually take place before returning a card to anyone. I only made 92 countries from this loca-

tion which isn't much of an effort in this atomic age . . ." Good luck Noel in your wanderings.

VKs will be delighted to hear that Jack Elliott, ZL3CC, a real old timer and a sound gentleman, expects to again visit Australia during 1950. It must be over ten years since his last visit and those who met him on that occasion relish the prospect of renewing his acquaintance.

A first instalment of the long-awaited cards from Bob, AC3SS, Gantok, Sikkim, via Calcutta, have arrived. Many of the cards relate to contacts as far back as 1946 and 1947. Bob says that numbers of cards he sent from AC3SS seem to have gone astray and he has had to duplicate and triplicate many of them. Bob is now AC4RF and works 14020 and 28040 c.w., and in good conditions will try phone despite his power limitation of ten watts. His current QTH is Bob Ford, AC4RF, Lhasa, care Gyantse P.O., Tibet, via Siliguri, West Bengal, India.

Further news from Felix, FK8AC, reveals that the yacht "Estrelita," out of Sydney and bound for U.S.A., visited New Caledonia. The radio operator aboard is VK2ABJ to whom Felix was able to give great assistance. "Estrelita" will call at Suva and Honolulu en route to the States. FK8AD is now on the air but on 7 Mc. only and FK8AE is still busy building his rig. Felix is now mainly on 14005 around 0430 to 0530 E.A.S.T. and as a result does not find many VKs awake at that hour.

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NEW SOUTH WALES

WOY WOY FIELD DAY 1949

The Division's Field Day was held at Woy Woy on 27th November and as usual attracted a number of Amateurs from all over the State. It was a great success, well over 70 Amateurs and a total of 140 persons were in attendance. The weather, although threatening, held off until the bitter end and so didn't dampen the enthusiasm of the many Hams who were wandering about with 144 Mc. gear of various shapes and sizes.

The following Amateurs were recorded as being in attendance: VK2s OR, WJ, VW, DO, ARN, LY, ARY, PZ, XT, AGY, IC, EL, AFS, VG, OA, OF, KR, CW, OY, NX, HZ, UY, CS, KG, TY, ASW, AAB, JU, WH, AMV, AGD, WP, BG, YC, HO, NS, AEY, EO, LX, MA, ZC, AHA, ASM, RU, MQ, PW, ARF, GA, BN, ARG, ARR, AGW, ADT, YL, AKR, XU, BF, AHU, NO, SW, AMP, JT, EH, CI, QG, AGO, AEZ, and AMU.

The various competitions created a great deal of interest especially the "mistakes in a circuit" contest. Competitors found so many mistakes and so many papers were returned that a special committee will have to be appointed to judge it. The two prizes, a Command Tx, donated by Electronic Equipment Co., and an Eddystone 144 Mc. Tuning Unit, donated by John Martin Pty. Ltd., will be awarded after the committee has judged the entries. The xtal frequency check competition was won by Trevor Evans, 2NS, and he collected a condenser, donated by United Radio Distributors Pty. Ltd. Runner-up was Mrs. 2RU who gained for her husband an 807 tube, presented by Mullard Aust. Pty. Ltd.

Mrs. VK2AHA received a cake dish, being the holder of the ladies' lucky ticket, and Mrs. Fitton, of Newcastle, some salt and pepper shakers for second place.

Two 834 tubes, donated by Philips Electrical Industries, were won by Sid Ward, VK2SW, as a ticket holder, and Trevor Evans, VK2NS, and Jack Young, VK2OY, winning 807 tubes, donated by Mullard Aust. Ltd.

Entrants in the 144 Mc. search had a hard job finding the hidden Tx and only one team managed to locate the Tx, it took them 45 minutes. The team comprised 2PW, 2ASM, 2ARF and Cess Cronin, and the cup was duly presented to them.

Harry Hine, 2ARY, of Bellingen, received an open order on Prices Radio for travelling the longest distance to attend, just a matter of some 300 miles.

It was voted a good day by all and aided by the friendly fellowship displayed by all present, it will be long remembered.

To Mrs. Hardman and Cess, 2KR, our thanks for the day, not forgetting the many other helpers. Yes, it will be on again in 1950.

WESTERN SUBURBS ZONE

Here's wishing all the best for the New Year to the Western Suburbs gang. May all your activities be crowned with success.

The six metre boys are hot after the DX since some rare ones broke through recently. Beams of fantastic proportions are the subject of keen discussion and the regulars are keeping a close watch for possible break-throughs.

2AH, Alan, puts out an exceptionally strong signal with good modulation. 2MQ has 829s going. 2XKs c.w. comes over well. 2IY puts out phone at good strength. 2VP's "halo" antenna lays down a nice signal. The handful of regulars on 144 are always pleased to welcome new ones on the band. 2YM runs 12 watts to a pair of 7193s in a unity coupled circuit and is one of the strong signals on the band; very stable rig. 2AH heard at excellent strength. 2CU has nice phone at good strength also. There are lots of good signals to be heard and flea-power makes its mark!

On other lower frequencies, 2OQ has been making some good DX contacts. 2JT should have his "A" frames erected by now. 2FZ still not very active. 2AHU has a nice modulator now. How are the records Curley? 2AER, haven't heard you for ages Max! Have you finished that new receiver?

NORTH COAST

Activity on the North Coast during the past month has been in the shacks, not on the air. A lot of interest is being shown in the proposed Emergency Network for the North Coast and full emergency gear is receiving attention. The organisers for the next W.I.A. North Coast Convention are making plans for the event to take place on 8th, 9th, 10th of April, 1950, Urunga is again the site. The local progress association has offered to help financially and to assist in the entertaining of visitors. It is a fine gesture that an outside body like the Urunga Progress Association is taking such an interest in Ham Radio. They appreciate the value of the hobby as fully demonstrated to them during the Kempsey and Maitland floods. Activity on the gentleman's band, 80 metres, has been retarded owing to QRN, but the old-timers still stick; 2GI, 2ARY, 2RK, 2CM, 2HC, 2LH, 4CU, 2XO, 2JC, 2XQ, 2AJR, 2ON, 2CI, and 2AAP are active. 6 metres will receive plenty of attention this summer in the zone. The Richmond River boys are working nightly on 6, the Clarence River crew are using 144 and it is hoped to see some of the Grafton gang on 6 soon. The Coffs-Bellingen boys have gear ready and 2XO is transmitting on 6 and listening on 40.

2DX, Nambucca, works 20M only. 2PA has 45 ft. pole erected and 6 and 10 wide-spaced beams are on top. 2DS, when not fishing, works 20 with an G8PO as a rotary. 2JC busy on 6 metre converter, the Tx being completed. 2WT hopes to be on 6 by Xmas, works the Lismore gang day and night. 2DK been on holidays and brought back a junior op., congrats Chas. 2EB now in Darwin waiting for a VK5 call and will come on 10. Reg Stick is making a comeback and has been issued with VK2AMS, welcome Reg. 2TG chasing DX with his windmill towers, one on each band. Bill, 2OE, expects to move to a new QTH anytime, he will be missed by the coastal gang.

2ARJ active on 10 and 20. 2AJB building new receiver and 2ZX active on 40, puts out a good signal even if two 70 ft. steel towers are lying in pieces in the backyard. N.B. 2XO is writing these notes for the next month or so, send your news along to him.

SEASONAL GREETINGS

N.S.W. Zone Officers extend to all Amateurs Greetings for the Festive Season and may 1950 bring stronger voices to the phone men, arms to the c.w. gang, and more news of your activity for these notes.

HUNTER BRANCH

The Hunter Branch extends its good wishes for the festive season to all, and hopes that 1950 brings better QSOs and DX. Members of the branch who attended the State Field Day at Woy Woy had a wonderful time again, congrats to Cess 2KR, Bill 2MQ, and Bill 2HZ and other helpers.

John, 2XQ, would be pleased to hear from anyone interested in the proposed Emergency Network at Hunter Valley—remember Maitland floods and the name we made there. 2ANA going on 10 with folded dipole, 30 watts working Ws and KH6s. That terrific signal from 2CS has appeared again, Europeans nicely. 2AFS has 95 watts on 10 too and really goes places.

2FP has 117 countries up on 28 Mc. phone, a marvellous effort, can anyone beat that? Warwick Parsons must have a starter! 2AGY still having trouble with a very high noise level, what about moving Fred? 2CW still silent, but doing good work for the branch. 2UY busy and not too active, how is the big Rx? 2NX still on 40 c.w. and does well. Welcome back to 2LV with a nice signal on 40, all the bugs out now! 2ANL popped up on 6 with three element beam, works all the 6 gang. 2BZ and 2UF working 6 and 2, Dave had a run on 10 DX, they all thought him a new station, he had been away for so long. 2XT still not on but very close we hear. 2ZC giving 10 phone a fly, gets out well with a folded dipole, what about a beam Jim, getting worried about an ever-increasing noise level, there should be a cheap city QTH going soon? 2XY building big 20 metre rig, gets out well with a QRP job and zepp. Bert Watts still awaiting a brand new call sign. 2AGD been giving DX away of late, also replacing 300 ohm ribbon with open line, has good dope on super-selective i.f's.

2PQ mainly on 10, 40 too noisy. 2TE working DX on 10 and 20 through bad auto QRM. No news of 2AMM. 2PT on 20 metre DX. 2VU, Singleton, puts consistent signals into Newcastle on 6. 2DG picking off nice c.w. DX on 10 and 20. 2AKF been on holidays at the lake. 2ADX works 10, 6 and 2. 2TY on 10 metre phone mainly and has been on holidays. 2XQ trying n.b.f.m. as a solution to his phone problems. Welcome to OT Ken Greenhalgh, 2KG, who joined up at the November meeting, looks like a comeback, Rx and v.f.o. built already. 2CI not very active, that 24 watt? rig nearly took off his finger recently.

The usual Xmas get-together took place at the December meeting. Dr. Adcock gave a very interesting lecture. Dr. Adcock is the inventor of the Adcock D/F system and is now a resident of Newcastle. We hope to hear a lot more lectures from this world famous figure. 2AHA is working plenty of DX with a zepp, two three element jobs nearly complete, one for 10 and one for 20, then he should rally know how good the new QTH is. Cheers and greetings for Xmas and the New Year.

COALFIELDS AND LAKES

Geoff, 2VU, very busy on 50 Mc. and heard working the ZLs. 2TY was on holidays, but managed to attend the Field Day. Not much heard from Kurri, though 2KF is on 10, 6, and 2, while 2KZ is on 10 and 6. 2PZ very busy, but made the Field Day. 2MK and 2ALR not heard of late. 2MK is a keen archer these days and the game gets second place. 2ADT has 829 on 144 and getting good results to and from Sydney, also working the ZLs on 6, but is looking for the real DX. Not much from the Lakes, but 2AAF, 2KR, 2AEZ, 2AMU, 2LX and 2GA are active. Cess, 2KR, did much good work at Woy Woy in preparation for the Field Day. 73 from the zone to all the gang for Xmas.

WESTERN ZONE

The main event of the month was the Field Day at Woy Woy. This was attended by quite a few zone members including 2WH, 2AMV, 2AAF, 2NS, 2HZ and 2LY. All reported a good time. 2BT has a new converter on 10 and 6, but so far has heard nought, with the exception of 2WH about 10 miles away. There was quite a big hook-up one day with 2BT listening and relaying on 40 to 2QA, and 2AAF also via land line to 2AMV who transmitted the 6 metre signals back to 2WH. We have to welcome an old timer, Wal Salmond, 2SA, to Dubbo, not on air yet but heard from 2AMR. 2AMR has 100 watts on 6 but so far no contacts this year, had a few last, works a lot of DX on 10. 2QA had a visit from 2XP and embryo Ham "Bill" who has sat for his ticket twice and is going to try a third time if necessary.

2XE has a new rig going a little better, but still not as good as the old ATR2A. 2II considering a comeback, is building a rig to beat all, exciter and five or six finals all in a steel cabinet with standard 19 inch panels. There is a new Ham at Dunedoo, 2AGK, using a Bendix Tx and getting good results on 10 and 20. 2NS is building rotary cubicle quad for 10, hopes to have it complete by early in new year. 2JW and 2ALX have decided to convert their 144 Mc. gear to 6, tired of working across the town and hope to get farther afield. 2JC heard on 40 and has the k.w. just about tamed. 2HC still using battery power, heard on Sunday skeds. 2DK also on batteries, became the proud father of a son and heir. 2LY no father, but just as pleased, has a new HRO Rx. 2LZ has a new QTH under way, much better one away from the line noise. 2EX still has housing problems, so can't unpack the gear. 2HZ's haywire has been admired by quite a few visitors of late and 2EF, Warimoo, been very silent.

SOUTH COAST AND SOUTHERN

Old-timer 2AIK again active after enforced spell, has moved to Jervis Bay, using the old gear: 6V6, p.p. 807s and AB2 807s, has plenty of competition from nearby naval station. Wyalong well represented by 2ALN and 2AFV, also 2AEL, the latter just back from VK7, nice signal from ATR14. 2AFV having spot of trouble in the motor generator, but no sign of the 400 cycle note in your phone George. Don't hear the following 2TA, 2TC and 2PN, although Ross was briefly on 40. The Wagga and Albury stations seem to have gone bush, not a single bit of news on the activity down there. 2PI recently entertaind a few of the Canberra lads. 2TV is on the sick list and will be in hospital for about six months. His gear is to be installed and he will operate on 40, give him a call chaps. 2PI has gear completed, 80 watt fixed station and small job for fireside contacts in the winter, new frequency meter and push-to-talk control. 2JQ was represented at the Woy Woy Field Day by his daughter, Betty, who had special instructions to "hear all" for him to hear later.

Jack, 2OY, represented Goulburn at the "do," had a nice time, how many errors did you find in the circuit? He was on holidays at the Lakes Entrance but came down to lend a hand. The Wollongong Club was strongly represented too, "Klefty" 2WP was there but left his big bottle at home. Ern Ashley, from Bondi, came with Western boys. He is your number one fan, Ian (3IK). The

Fishers—Eric No. 1 and No. 2. designers and builders of 2AMV were also there. Looks like another Ham in Yass, he was a Radio Mechanic in the R.A.A.F. 2ALS not very active, fishing is running neck and neck with radio, but use of v.h.f's. makes it impossible to receive local stations. Finally congrats to N.S.W. W.I.A. Secretary, Geo 2GC, on his engagement, plenty of 88s but no 33s these days. Many thanks to 2CZ, 2ARN, 2GA, 2KR and families for the Woy Woy hospitality. Finally what we want to know is how the 60 stone of Ham Radio from the Central West fitted into an 8/40? It couldn't have been comfortable, allowing for the portable gear and iron rations.

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VICTORIA

SOUTH WESTERN ZONE CONVENTION

The zone's Convention, held at Ballarat on the week-end of 26th and 27th November, was agreed to be an unqualified success by those who attended. However, the attendance of zone members was disappointing, only four members outside Ballarat making an appearance. It is understood that many chaps were unable to be present, but apparently others did not consider the trip worthwhile since there was no business meeting.

We were pleased to welcome a large contingent from Melbourne and trust they had a pleasant week-end. On Saturday afternoon a round of shack visits took place and the mighty 3HW beam was perused, however, the greatest attraction seemed to be the numerous 813s on show at 3GR. Thirty-five showed up for dinner at a local hostelry and went well except for 3RU who couldn't get any cream. We then adjourned to the R.S.L. Hall where 3OO entertained with a show of magic, very much appreciated by all. 3SE then presented a picture show and after one or two games, supper was partaken of and all departed at an early date to prepare for the big day.

Sunday found everyone installed on the picnic ground at Lake Burrumbeet before dinner and the air was soon a trap for birds with antennae strung in all directions.

After dinner a short contest was conducted, the winner being 3AGD, ably supported by 3AKR. Those boys really believe in operating de luxe. I have a suspicion that we may hear more from these boys regarding their week-end. Foot races were held, one for single men and another for married men. Who was it bit the dust in the latter race? 3BI showed great promise as a galloper.

Competitions for home-built equipment brought to light some very nice equipment, particularly the v.f.o., built by 3EM. A welcome was given to the visitors by 3BI to which our State President, 3ML, replied. A vote of thanks was passed to the ladies for their work in preparing the meals. Afternoon tea was then served and after a considerable amount of earbashing, the party broke up.

Any notes of doings in the South Western Zone may be sent to W. E. Sadler, 201 South Street, Ballarat, and will be greatly appreciated.

3ABK has been busy altering his type TA12D and hopes to have it going soon, has not been very active lately. 3WT has gone QRO with new rig. 3BU still putting out a very nice signal on 40. Bill had the gang at his QTH to take the top section of his 47 ft. mast down to replace new ropes, old ones broke during a storm. Bill gave a sigh of relief when she was up again. Has been hearing signals on the 6 metre band, guess it won't be long before he is operating on that band.

3ALG has new modulator going but not 100 per cent. yet, is now using a dynamic mike. Contacted VE1GG on phone on 20. 3AKE never heard on 40 40 now. 3BW heard on 20 recently calling CQ DX, was answered by 3ALG! Some DX Arch. 3AJT a new comer to the Geelong gang, heard working the DX on phone on 20 and putting out a very nice signal. 3ABE still working a few Yanks on phone. 3AJF, Alf, heard on a couple of times last month after an absence from the air since February. 3CM and 3IC have not been on the band much over the past month. Bob is fixing up his motor bike. 3APG is re-building again and hopes to be on the air again very soon.

Geelong Amateur Radio Club.—An enjoyable evening was spent by members of the G.A.R.C. at the shack of Bob Wookey, 3IC. Bob had quite a bit of gear on display. The gang were interested in his BC348 receiver. He has had to resign from the position of Hon. Secretary owing to being transferred to Werribee. Bob has done a good job as Secretary, so we wish him all the best as he takes up his new duties. Mr. Peter Cartwright has been appointed Acting Secretary for the time being. At the meeting following, after a discussion on a forthcoming field day, Mr. Jack Matthews, 3SY, gave us a lecture on the operation of vacuum tubes, Classes A, B, and C.

Several members of the Club took part in the activities when Mr. Ken McTaggart, 3ANW, took portable equipment to the look-out and contacted 3RR at McCrae on 580 megacycles, a distance of 40 miles. Contacts were established on 2 metres with 3ZL, at Ballarat, also with 3RR, 3AKC, 3ED, and 3MD on the 6 metre band.

WE CAMPED AT LAKE BURRUMBEET

(With apologies to those who have already been ear-bashed)

Recipe for having enough enjoyment in one week-end to last a lifetime: Take one South Western Zone, W.I.A. Convention-cum-hamfest at Ballarat, two Amateurs with one carload of radio gear, add two Associate Members, mix thoroughly with "Ham Spirit," place on a small hill overlooking the lake at Burrumbeet Park, and simmer frequently with high frequency waves for one night and one day, using 3½ hours sleep . . .

Unfortunately this recipe can never again be tested, because the convention mentioned has passed into history; so it is with the hope that others might share our enjoyment and memories that I write the following account.

As this deals mainly with the camping episode, the events leading up to it can be brief. We (Kevin, 3AKR, and myself, 3AGD) arrived in Ballarat early on Saturday morning, collected the "gen" on the camping park from 3BI, and proceeded there with much haste. The base camp site was chosen, bearings ascertained with prismatic compass, and the erection of the main antenna begun. This was a six wavelength long wire prepared the previous week-end, for our attack on 20 metre DX. Our method of placing halyards over convenient limbs on the pine trees, per medium of bow and arrow (with large roll of resin cored solder around the pile-point to you) was not entirely successful, due to the rough breed of bark on said trees, but we eventually erected the best dog-leg long wire ever seen, by much breaking of string, boughs, and arrows, all this activity giving much delight to two busloads of school children. I am afraid that they will continue growing up with the conception of "Hams" which is prevalent at the moment.

Having staked our claim we returned to Ballarat. As to the remainder of the day, suffice to say that we joined in wholeheartedly with all the doings: the conviviality, the meeting of strange faces with well-known voices, the round of shacks, the dinner and social evening. The highlight of the day as far as our portable operation was concerned, was the contacts with 3RD (Caulfield), 3YE (Colac), and 5CH (Mt. Gambier), on 40 metres, using a 12 ft. centre loaded whip antenna, and the Type 3 set up in the car.

During the afternoon we learnt that we were to have company at the park for the night, namely Brian Stares and Roy Barnett from Cressy. After supper the four of us set out, and after only missing the turn twice (the moon was not out, but one of our lights was), we arrived once more at the base camp. The next half hour was used in feverish activity in getting the portable shack set up and feeders attached to the long wire in preparation for 20 metre DX. Some little diversion was caused by Roy who trid to jump a large stump. He would have made it if he had got out of the car first. It took much jacking, with the aid of a spare wheel and a post (which the caretaker requested to be replaced next morning) before the hurdling was completed and the lights were turned in the required direction.

At last all was ready, and tuned up on 20. Equipment as follows: Type 3 Mark II. Tx, series cathode modulated, input 8 watts; Eddystone "640" Rx, running on FS6 vibrator power supply.

The next two hours can be passed over very quickly and put down to experience. We did not get a bite; and so it was that four very disappointed enthusiasts climbed into hammock, sleeping bag and car at 0200 hours after contacting nothing but gnats and large mossies.

Came the dawn (very early at Burrumbeet) and we found that Brian had been out and about for some time, because every time he had gone to sleep he had slipped forward on to the dip switch, gear lever, etc. I think next time Roy will put the car with the let-down seat in the middle of the cricket pitch. While the breakfast was cooking we erected a Windom, tuned up on 40 metres, hung the antenna relay from the roof of the canopy, removed the vibrator hash from the "640," and by 0730, with the breakfast disposed of, we proceeded to find out how long the batteries would last with non-stop operation.

For the next four hours we had a very successful time on both 20 and 40 metres, and I would like to thank those Amateurs in four States who kept us busy throwing all the switches, and gave us such encouraging reports. All contacts were made using the Windom antenna, the results obtained making up for the disappointment the night before.

I feel that a digression on the subject of antenna would not be amiss at this point, as we proved something that will be of interest to those lucky Amateurs who have the space to erect long wires. We have since heard that our friend, Jeff, 2AHM, was also caught. The long wire we erected was made up of four coils of plastic covered stranded steel "aerial" wire which is on the market at the moment. Its weight and price had obvious advantages to us, but apparently these advantages disappear entirely when the wire is used for transmitting antenna of over 100 feet. Also we found that the long wire we had, was the only one we had seen that would not work as a receiving antenna. Next time it will be 16 gauge hard-drawn copper.

To return to the story; by 1130 hours, most of the other boys attending the convention were at the park, and the report of the activities of the rest of the day I leave to better pens than mine. One thing more; I would like to assure some sceptics who visited us on the hill, that we did get everything back in the car, and all did the 115 miles home quite safely.

NORTH EASTERN ZONE

3AT again managed to gather in a good muster for the December zone hook-up, but why the prolonged absence of 3JK, 3BP, 3HP, 3DG, 3GD, 3HN, etc., etc. All members please take note that the next Convention will be held at Shepparton on 15th January, 1950. An interesting programme is being arranged including lectures, wire recorders and competitions, etc.

A Bendix BC221 Frequency Meter is now in the hands of the Secretary (3APF) and is available to any member of the zone for his use. Contact 3APF direct or be on the next hook-up (8th January, not the 1st) for any further information re this meter.

John Miller, 3ABG, is now working at Essendon with the D. of C.A. as a transmitter technician, but will be on the air most week-ends from his home QTH (Avenel) where the rig is still located. Andy 3FD is expecting a new generating outfit early in the new year—make sure it has a high output in watts Andy. Chas, 3ACW, has built an emergency rig of approx. 5 watts which operates from 6 volt battery. What's this I hear about you sitting with the lights out, watching the modulation indicator Chas? She must be a tasty pupil, eh!

At last Mrs. Rankin has caught up with Ken (3KR) and has kicked him and his gear out of the house into a shack in the back yard, nice work Elsie. Ron Gibb still swotting code for next exam. 3HP all prepared for any bush fire emergency. 3JK chasing grubs to contact murray cod. 3YV chasing 10 metre DX, the latest being HB9DS, EQ3SAM, VP6SD, OZ9TI, DL3EA, OH2OV, GI6TK, I1AOV, ON4PA, and LA1MB.

One last reminder chaps, DON'T forget the next zone hook-up is on 8th January (not the 1st), so please make every endeavour to be on it as Convention is one week later.

EASTERN ZONE

During the month we had a visit from Syd Clarke, of Lindenow. Syd is an ex-VK2 and served with the R.A.N. He has sold his business and expects to be in Dargo for a while, where he hopes to be on the air. 3AHK and 3QZ dropped in on 3SS, Keith Scott, and saw his f.b. shack. Everything is switched by relays, even to the earthing of the aerial when he closed down. Keith is making the maximum of his posposals gear, and for inspection, produced the super receiver he is building. We are satisfied that progress has ben made since we saw it not more than six months ago.

Did you know that 3BB, Bert Budge, is going to be Yallourn's new butcher? He is a very busy man. Good luck in the new venture, Bert. We are anxious to get a progress report from Omeo. 3WE has not been heard since he started to shift his location a few weeks ago. 3QZ and family have moved into their new home. Although it is not yet finished, it's much more comfortable than the garage. 3DE has also moved to a new location at Morwell. When will we hear you on the air Doug?

You will be interested to know that Max Reiper, of Bairnsdale, is now with the R.A.A.F. in Port Moresby. During our last visit to Bairnsdale, his father showed us some of the stacks of QSL cards that are coming in for Max from all over the world.

Gordon Morrison, 3TH, called in on his way to the Traralgon Show recently. His interests are divided between dairying and Ham Radio. He is one of those fortunate chaps who has the power on to his farm and makes full use of it. Gordon is anxious that nothing is left to chance for our next Convention. Remember the date, A.N.A. week-end, 28th January, 1950.

CENTRAL WESTERN ZONE

The 1948-49 award to the zone station who had made the most improvements during the year was announced over the zone hook-up on 13th November. The award was made to Jim Farrer, 3DP, who has carried out a lot of work during the past year with a limited amount of gear, and under conditions which were not of the best. Congratulations Jim, and we hope the 807s will soon be operating.

Quite a number of chaps seem to be working on 20 metre beams in the zone. Those of us who were at the Horsham Convention will remember those tapered elements of 3TA's. Byron tells me the four element beam has now been assembled and is tuning up nicely, and hopes to have the beam and 60 ft. tower in operation by Christmas. 3AKP is also busy with the field strength meter and tuning the three element up to concert pitch; another adict is 3GN who has set himself an extensive construc-

tional programme including a 36 ft. tower with a G8PO beam for 20 and a three element job for 10 metres. George is also gathering a "radio centre" type of collection of Tx and Rx for all-band operation; an 813 final for 20, and a 10 metre rig finishing up with a 35T. Both rigs starting off with a BC458A as the v.f.o. and modulated by the 807s. Class B job, for a.m. and n.b.f.m. on both bands using the Germanian xtal set-up; for 80 and 40 a TA12D will be used, modulated by pair of 809s. The Rx department will be covered by an Eddystone "640" and an AR7 as a stand-by.

3EP in Bendigo has been undergoing one of his periodical re-vampings of the modulator and has a nice sounding job using the 2JU circuit, 6SH7, 6SH7 triode, transformer coupled to a pair of 6L6s. 3YW, despite crude remarks, is still happily n.b. f.m.-ing on 3.5 and 7 Mc. and was quite surprised to find one station on 80 and lately two on 40 using the same type of transmission. He has also taken unto himself a "S.L.C." Rx, reputed to cover 160-190 Mc., so will soon have to think up ways and means of getting it painlessly back to 144 Mc. The Bendix frequency meter has at long last arrived in the zone, and after clarification of conditions of use from H.Q., will be put into final running order.

QUEENSLAND

News from this Division is very scarce this month. Main topic amongst VK4 Hams is the proposed new system of zoning. Reports to hand as we write these notes indicate that members can expect very little progress in this matter during the present financial year. The outstanding point from all discussions on the matter of zoning seems to be "greater representation on Council for the country members." It is expected that in the near future all members will receive a copy of the proposed changes to read at their leisure. We call upon all to give the matter their careful consideration and when called upon to vote on the subject to do so and not sit back and leave it to the other fellow. Quite a number of Hams seem to have a lot to say "off the record," but don't express their views at voting time.

All bands have been extremely poor during the past month and 4WI broadcasts have not been heard, at all well, on only one out of 4 occasions. Greatest activity appears to be on 50 Mc. band, and more about this appears in our 50 Mc. notes.

ZONE AVTIVITY

Gympie (4HZ).—4XR still waiting on dural for a rotary beam on 20. 4LN better known as "Beam Barry," is at present enjoying his holidays motoring in southern Queensland. 4RA still working Europeans early morning and building a flextal oscillator to take the place of the ARC5 which drifts. 4KT still inactive, but believe he has a pirate doing plenty for him.

4HD, Max, works Europeans on 28 at night and keeps the 50 Mc. receiver running 24 hours a day for the break through, and has been very well rewarded of late. 4HZ, Jim, has dressed up his v.f.o. and has added bandspread. Jim having a lot of fun trying to work out why one of his antennae acts as a reflector on the other antenna which runs at right angles to the first.

Maryborough, Bundaberg, Mackay.—No news from these zones this time.

Townsville (4GD).—The Townsville Club, apart from giving their students every assistance in obtaining their A.O.C.P., has now decided that when a member obtains his licence the Club will pay his first year's licence fee. 4RW is still tinkering with a beam. 4FA has a nice receiver on 144 Mc.—lined it up on 4GD's carrier on that frequency. Believe 4DH was seen about 1 a.m. up on the roof with a large neon seeing how much soup was in the antenna and found just as much glow came off the iron roof.

4JH has a new shack and now with 4WD is casting glances at people's windmill towers. Members of the Club are also in a position to borrow a c.r.o. that the Club has built. 4GZ, of the city once called "the world," has a new v.f.o.—1852 "Clapp" osc. with 50 volts h.t., followed by an 1852 isolator keyed in the cathode. 4FC, of Ingham, is re-building. 4GD has re-built the v.f.o. and now has it running on 1.75 Mc. Len uses phase modulation and finds it works very f.b. using only a carbon mike, mike tranny and westector. 4EJ has W.A.C. using a same system.

Darling Downs (4CG).—No news received this month, we understand Cliff is away on holidays.

Students' Section (Ray Lewis).—The theory classes on 3rd November were replaced by a demonstration by 4FN with his 3-inch c.r.o. which was thoroughly appreciated by all three of the students present. 4FN also conducted the code class at which six were present. 4IF has returned and has again taken over the job of theory instructor.

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SOUTH AUSTRALIA

The monthly general meeting for November was again well attended and Mr. Al Smyth (5MF) entertained the large gathering with what was probably one of the best lectures of the year. The title "Frequency Measurements" was something of a misnomer, as Al covered a tremendous amount of ground in an endeavour to show orally and pictorially just what takes place in a normal Amateur transmitter from the time the audio is applied to the modulator until it appears on the air as a radiated signal. A great deal of apparatus was used in the lecture, and the manner in which the vote of thanks, proposed by Ross Adey (5AJ), was received gave a definite indication of the meeting's appreciation of the lecture.

For the first time to my knowledge no visitors signed the book, but by the way applications for membership have been pouring in of late I can quite understand it. There are no more visitors left, they are all members now. Everybody was pleased to see Ken Thiele (5QP) present at the meeting after such a long absence, and sparking on all six too. Talking about sparks reminds me that Ralph "Amigo" Turner (5TR) decided to make his own crackers this 5th November, and believe me he was a huge success. There was no doubt about the bang part of it, the neighbours are still wearing cotton wool in their ears to prove it. However, the skyrockets were a washout, plenty of bang but they just refused to go aloft. They did everything else though, they tore up and down the garden, they went through the windows and came out of doors; in fact they put the "wind-up" everybody near and far until at last the youngest harmonic of the Turner household put his head very gingerly out of the kitchen door and said in a very plaintive voice, "No more bangs Daddy, please no more bangs." This definitely moved Ralph and he called off the bombardment, but he is anxiously waiting for next year as he has found out that he left out of the skyrocket mixture a drachm of tincture of self raising flour, so look out next year.

Due to circumstances over which we had no control, Doc Barbier (5MD) and myself (5PS), with our good wives, found ourselves attending a concert evening the other night. A real "La de Da" affair, evening dress and what have you, and believe me that Doc and I were feeling very sheepish as we entered the auditorium with the curtain just rising. We both gave a gasp of surprise as there on the stage stood the Metropolitan Male Choir with "Deadeye Dick" Laidler (5TL) singing with a voice that was at least twenty db over S9. Well fair dinkum, I could have hit him with a tomato one hand kneeling from where I sat, and Doc's hands were fairly itching. I will say this for "Deadeye," he has wonderful self control; we pulled faces, poked our tongues out, and did everything we could to muck up his vibrato obligato, but he beat us hands down. Very versatile is our Tom and quite a good voice if I might say so. Just goes to prove that it wouldn't matter where one might go, one will always bump into a fellow Ham. My wife said to Mrs. Barbier after the show, "Both Warwick and Ted seemed to thoroughly enjoy themselves tonight." If they only knew!

Ever since I became the VK5 scribe for this magazine, someone or other has always picked on me for what I have written. This month it is different, the Northern Net is picking on me for what I have not written, in other words they are hostile with me because I never write anything about them. Speaking just as an ordinary Ham, I personally don't give two hoots about this, in fact they can go peddle their potatoes. Speaking as the scribe for VK5, I feel that they have a definite grievance and it is my duty to do something about it. Now as I have said before, I can't write about people if somebody doesn't send me down some news. "Splatter" is no good to me because it is with me for at least a fortnight, and then lays at least a fortnight old when I get it, it remains with the Editor and the printer for another fortnight or so, which makes the news a little on the old side, plus the fact that it has already appeared in "Splatter." Now what about it fellows, if a couple of you "grizzlers" put the time you spend grizzling into sending me some news on the first of the month, all will be well. Give it a try chaps.

Joe McAllister received this week an extra good photo of all concerned at the Crystal Brook get together last Easter. L. Catford has been fairly busy lately but hopes to erect a six and two metre beam on top of his forty foot tower soon, so look out for a very hefty signal signing 5XL from Clare any day now.

Perc. Hutchins (5PH), of Willaston, near Gawler, is a Ham of twenty years' standing and is using an input of 40 watts into an 807 final with the Shure power supply genemotor and vibrator unit working off a wind driven lighting plant. The outfit works on five different frequencies on 40 metres, and the aerial is fifty feet high and a half wave at that. A crystal mike, pre-amp., and a class B modulator complete the score. Perc. is a keen gardener, plays solo cornet in the Gawler town band, and last but not least he works at the Adelaide Railway Station in the electrical dept.

L. Duncan (5AX), of Gawler, is another keen Ham using a transmitter running 100 watts input and his hobbies are radio and more radio. Fred Brown, also of Gawler, is swotting hard for his A.O.C.P. ticket. Don't forget Fred, the first ten years are the hardest. All the best anyway and hope see you on the air soon. Congratulations to Bert Winter, of Cape Couedie lighthouse, at Kangaroo Island, who was a successful candidate at the recent examination. It was worth pegging at wasn't it Bert. That full member's badge that Doc sent you by mistake must have been a good omen. Hope to have a chinwag some day.

Congratulations to R. A. Sedunary (Solomontown), B. Condon (Port Pirie), A. S. Condon (Laura) (yes they are brothers), and C. W. Mann (Kadina). Welcome fellows, and please leave some DX for us to work. Laurie Sjoberg (5SL) is down from Renmark on holidays and chasing the sixteen footers over at Kangaroo Island, whilst Wick Bayly (5WM) is relieving at Renmark and dancing the light fantastic every night to the dulcet strains of Lil Gray's orchestra. What a life.

5MS has the new Eddystone receiver and is also showing interest in ten metres. Of course Stewart has another new aerial. 5JA is running a pair of 807s at 50 watts in his s.s.s.c., that is, 50 watts on modulation peaks. John is also working on his AR7 with the idea of getting it going on six metres. 5TW has had a few contacts on his cubical quod, and Tom is quite satisfied with the results.

5FD has changed his place of abode and is now off the a.c., and John has therefore been inactive. 5KU has been house-building and "Erg" now realises that it doesn't mix too well with Ham radio. 5CJ has been only on forty and has nothing of any importance to report. Col is about a week behind 5CH with his 2 metre gear and therefore they should be on the air before these notes are printed. Thanks for the wishes Col and I heartily reciprocate. Thanks once again for the ever-reliable notes (Northern Net please copy).

A. Butler (5BR) and P. Syme (5KB) are down at the Mount doing a job at the local drome. They are visiting the various Hams about the place in their spare time, although the local boys are not very worried, having successfully withstood visits from 5MD and 5RR quite recently. 5CH, having finished his 2 metre transmitter, is now putting the finishing touches to the aerial array which will be a lenfo series phased affair. If any of the city 2 metre gang suffer with burnt out aerial coils, it could be Claude with his beam pointed North West.

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WESTERN AUSTRALIA

The only visitor at the November meeting was 6MU from Merredin and Malcolm was about the only country member at the dinner unless you could count 6CP and 6LM from the wilds of Bayswater. The meeting was well attended by the usual regulars. The President, 6WH, stayed only long enough to tender his apologies then had to leave, the chair being taken by 6KW.

New members approved were 6WR of Palmyra, 6GU of Woodman's Point, and 6BO of Bassendean.

Several items came forward from the recent Council meeting. Annual trophies were considered but only one entry was received from 6WG of Albany for the Parkes trophies for v.h.f. work. As it is proposed to hold the annual dinner earlier in the year in future, it was decided to close all trophy entries with the closing of the financial year in February. This will allow consideration of entries and decisions made on awards before the dinner which should be around May or June. However there will be no need of months of consideration unless more entries are forthcoming. It's up to you chaps, you will find the conditions of entry for these trophies in the Bulletin dated 5th October, 1948.

Another Council suggestion concerned the Remembrance Day Trophy, photographs of which were passed around for members' information. The suggestion was that the Trophy should be allowed to visit all Statse before finally settling in the State fortunate enough to win it.

A breezy letter from 6WZ was read to the meeting giving details of Harry's recent so-journ in hospital.

Having in 6MU an active member of the Emergency Network in the country, the network received a fair amount of discussion. The responsible officer, 6MB, reported favourable progress and 6MU gave a few suggestions for exercises the groups could carry out as training. In the matter of emergency frequencies, 6GM, the Federal Councillor, advised that the P.M.G's. Department recommended the use of frequencies of 3501 and 7002 Kc. for emergency operation.

6MK introduced a subject which was rapidly taken up by members and a lively debate ensued. The "A.R." column "The Old Man" was the bone of contention and the general opinion of members seemed to be that, while the need of some corrective channel was undeniable, the direct personal attack was distasteful and lowering to the standard of a technical magazine. This opinion applied also to the using of the columns of "A.R." to publish letters attacking individual Amateurs.

The matter of the invasion of our bands by high-power commercial stations was again brought up by 6SA. Outlining some of the loopholes in the International agreement by means of which these intruders get away with it, Jim appealed again for any members hearing these stations (their receivers would have to be pretty poor for anyone not to hear them) to log their identity on the forms provided and submit them. Only by a united effort will anything be accomplished to rid our bands of these pests who render large portions of the bands unusable with their splashes and clicks.

As an answer to those members who claimed low finances as an excuse for missing the dinner, 6DD suggested a dinner fund to which members could contribute, say a shilling per month, to ensure the success of our main annual function.

The lecture of the evening was given by 6KW and the subject was of popular interest. The "building-out" of unwanted frequencies in the modulator to reduce the spread under modulation. Methods were described of simple and effective clipping of the speech channel to approximately the range of 500-3,000 cycles. Ron used a wire recorder to demonstrate the fact that the addition of the limiting devices made no apparent differences to the quality of the audio on the transmission.

A short demonstration of v.h.f. gear operating mobile on 144 Mc. was given by 6AG and 6RU using 522s. Wally drove his car up the Terrace with a three element beam standing up in front and managed contact with the meeting despite the hazards of driving through the city streets.

PERSONALITIES

The dinner was a little better supported this year, but was still less than half of the full membership. The committee did its usual fine job and the evening was enjoyed by some 60 to 70 members and friends. Seen taking on fuel was 6CM, aided and abetted by 6AS and 6SK. Staunch oldsters in 6WS and 6CP were showing the youngsters a thing or two. 6MY produced a couple of quiz sheets that really gave the teetotal merchants (were there any besides 6CK?) an unfair advantag. Real mathematical marathons that kept the boys head-scratching. Spotted a menu headed VK2AGA so I guess we had an Interstate visitor in our midst.

Our new member, 6BO, is said to have been over zealous and slipped while adjusting his 6 metre beam. Rollo's OK again now but that is what I call throwing one's self into the game!

Before I go any further, I must remedy an oversight in December notes. Being new to this game, I forgot to include Xmas Greetings, so here is a belated effort. Here's hoping you had a good Xmas and that 1950 will be a bumper year in all respects!

6CM now has a three element on ten which is working out well. 6KW advises the modifications to the prop-motor for beam rotation, described in a recent "QST," is well worth while and gives faster turning with lowered consumption and both mechanical and electrical noise. Big news for 6GD during the month was an elusive South American to give him his W.A.C. at last. Also watching the QSL box these days is 6HL who now has 95 confirmed countries. 6MK brought his Collins 75A along to the meeting for the boys to admire and also gave a short resume of the receiver's layout and performance. Ten is proving a popular band these days with an increasing number of the boys deserting twenty during the busy periods. Another local in 6ZZ has been getting his rig to work down there.

When the DX fades out in the evenings, ten is like 40 without the QRN or the commercial QRM with all the local boys swapping tales about the DX they either worked or that got away. See you down there soon.

These class B 807s are proving popular as modulators. 6AS can vouch for their effectiveness. 6RW even tried to use a pair as r.f. triodes, but found you had to put in nearly as much as you got out, so went back to tetrodes. Found some explanation of 6JB's absence from the air in the recent announcement of Alan's engagement.

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TASMANIA

News time again. This month we are commencing a feature consisting of a short description each month of one of our local stations. The high standard of equipment construction in southern VK7 makes this worthwhile. 7LJ, our esteemed President gets it this month. Lon Jensen's set-up features a remote located v.f.o. with "Clap" osc. 6J5, 6V6 buffer. Tx consists of band-switched 6N7, 807 exciter, and 813 p.a. running the full gallon. Rx is Super Pro. Other equipment includes a Type 3 Mark II. for standby operation, a versatile frequency meter with multivibrator and twin 100/1000 Kc. crystal checks. A commercial c.r.o. and a deep and versatile junkbox round off one of our best c.w. stations, operated by a real OT of more than thirty years' experience.

A high operating standard, combining consistency, efficiency and excellent equipment control, places Lon very close to the DX C.C. mark. 121 countries have been worked now, but although Lon won't divulge how many confirmations he has, methinks it is very close to the 100. Lon's antennae have helped in no mean manner with a lazy-H, single section centre-fed W8JK, and stad-by zepp. The whole job has been done on 20!!!

7BH heard on 40 using c.w. and a.m. Your c.w. f.b. Brian, but phone—well Confucius say "Ants in Pants." 7FM consistently works Ws on 40, and 7JB, 7RM on 20 spasmodically. 7DH's s.s.b. f.b. on 20 using phasing system. 7LE heard using a.m. on 40, hearing is believing. 7AF nearly completed yet another receiver. Bob now has four. Talk of Noah and his Ark. Time it all got some work OM. Your QTH not that bad. 7SK busy building at new QTH on Mt. Nelson. 7BH has antenna strife. What say one dark night we shift the R.I. building up a few blocks, Brian, then you can work local as well as South Pole. (Jeeves suggests tying feeders to end of red tape. Too many bends!)

7OM's new Rx looks and works f.b. That dial turned nicely, Bob. Len Dodds, newly licenced, call unknown, should be on soon with the ex-7TA Type A Mark III. Welcome to hamdom, Len. 3ARL, ex-7OL, heard on 40 often with very consistent phone. 7SJ has obtained (or maybe purchased) BC221 frequency meter. 7TA made a lightning 3½ hour raid on Launceston. Also bought new (and very expensive) Kilocycle. Busy studying instruction book, but work on new rig is progressing well, and Xmas Day may not be altogether free from QRM locally. Well, again we take off in search of more news, which is welcome at all times. As 7EJ has permanently gone bush, your scribe temporarily 7TA, so drop a line care 7HO b.c. station, Elizabeth St., Hobart, with details of rig, etc.

Some people can be "stiff." There is a well-known Ham in Hobart who was so keen to have a lash at the DX minus QRM, that he took the afternoon off from his business to have a go at it. Well it would have been OK but there was nothing about to work and if that wasn't enough to make you give the game away, he had the misfortune to get himself booked for having a signal outside the band! Everything is on the up and up now, but as I said, "you can be stiff."

I suppose at some time or other most of the married Hams have had the experience when working on some piece of equipment late at night of getting numerous calls from the XYL to come to bed, etc., etc. Well it's happened in reverse! This time the XYL of a certain family was building the

modulator of the new rig and the OM was twiddling his fingers. Around about midnight the conversation went something like this:—

OM: "Don't you think it's time you knocked off and went to bed."

XYL: "Not yet, I've still got to hook up the screens and the h.t. line."

Ten minutes later.

OM: "Hey! S—— why don't you give it away, it's past midnight."

XYL: "I've only got a few more leads to put in and I'll be finished."

OM: "Goodness me! S—— there's no doubt about this Ham Radio once you get going, there is no stopping you, etc., etc."

The foregoing stories are quite true and if certain people don't come across with a pair of 866s or similar, I may be forced to divulge names in a later issue! It looks as though that if I go on any further, "A.R." will be dubbed as a scandal sheet, so cheers for now and don't forget to let me have any dope that YOU might overhear.

NORTHERN ZONE

No lecture was given at the November meeting of this zone as it had previously been agreed that this meeting be set aside for zone and W.I.A. business. Several items were discussed, these included the emergency network, also the coming Federal Convention.

Our response to State Headquarters' circular on emergency equipment was very disheartening, however 7TE and 7AM have now taken this matter in hand and it is hoped that an efficient self-powered emergency station will be the result.

7PF, 7BQ and 7LZ have been keeping a check on six metres, however nothing has as yet been heard although on numerous occasions the different 33 Mc. beacons have come through at good signal strength.

7RK is still efficiently handling the DX for the zone, whilst 7MC, 7TE, 7DB, 7PF and 7BQ are all active on 144 Mc.

Our State Secretary advises that only two VK7s have forwarded him logs for the recent VK-ZL DX Contest, so it looks as though the other VK7s, like those in this zone, decided that it just wasn't worth the fight.

As our zone does not wish to place too heavy a burden on our very willing, but none-too-numerous, lecturers it was decided that our next meeting take the form of an impromptu debate. All members attending will be divided into two teams and an independent adjudicator will then advise the subject to be debated. It is expected that both an interesting and humorous evening will be the result.

It is yet to be decided as to whether a meeting will be held in January, however, all members will be advised accordingly in due course.

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FIFTY MEGACYCLES & ABOVE

(Continued from Page 15)

Conditions to Geelong have been really excellent on some nights during November with signals up to six S points above their normal value and it is felt that on nights like these, much more distant contacts could be made if stations were on. As a guide, it has been noticed that these conditions are usually prevalent on a warm night just preceding a cool change, so if those country stations who have the gear would put out a few calls in the direction of Melbourne and Geelong when they note these weather conditions, some interesting contacts might be made.

While on this subject we would ask Melbourne stations to keep their beams turning when looking over the band as some stations, particularly those to the north of the city, find that they are missing out on contacts due to the beams being always side on.

An interesting contact was made on the 13th November when 3CI portable, six miles south of Tatura, worked 3ABA in Box Hill, a distance of 90 miles with the dividing range in between. 3CI was receiving 3ABA S7, with signals steady, while 3ABA was receiving an S4 signal with some QSB.

3AKE has been workng on 144 Mc. and has now got 580 Mc. in his blood, so he may be on that band soon. 3VF has not been on very much. Arch. 3BW, still having contacts on 2 and 6 metres.

TASMANIA

From north-west we hear that 7KB is using an SCR522 and works cross-band with 7AB who receives him on a braod-band converter. 7KB prefers converter to SCR522 receiver. 7PF now has 12 elements in his antenna. Says it seems to be working OK. Has sent his converter over to 3AKE to have it compared with VK3 receivers. 7BQ has new converter but no sigs to listen to as yet.

Newcomer in Hobart is Ted Nicholls, 7RY, experimenting with super regens and unity coupled oscillator with pair CV6s. 7BM having loads of fun working mobile in car with mod. osc. He is convinced after tests with 7DH that for mobile work, one needs fairly high power and crystal control. Says he can receive 7DH from Rosny Hill quite strongly around and about Hobart.

288 AND 576 Mc. JOTTINGS

3MD, 3EO, and 3LS are testing gear on the 288 Mc. band and will probably have contacted by the time this appears. Gear being used consists of modulated oscillators using 7193s, although 3MD has also been testing an 832 as a push-push doubler from 144, using series tuning. This sounds quite a promising arrangement and may offer an easy way for those with 144 Mc. gear ending up in 832s to get on the band.

This has been a month of achievements as far as 576 Mc. band is concerned. With gear being constantly improved, new and interesting contacts have been made, and distance records broken. 3DA, of Caulfield, has worked 3RR at McCrae, 38 miles, with S9 signals both ways, over a practically line of sight path. 3RR has improved his signal by putting up a 60 degree corner reflector, and also has a self-quenched super regen using an RL18 working very well. 3RR and 3XA have contacted, the distance being 42 miles and this stands as a record as far as home to home work is concerned. The path is not line of sight and signal strengths vary greatly from day to day, apparently depending on the weather conditions. Don, 3XA, now has an eight element beam with a plane reflector up 30 feet and this has been responsible for a great increase in his signals.

3NW has been unable to get through to McCrae from his home location due to a higher ridge to the south of him, however on taking his portable to the top of the ridge Ken has worked 3RR with S8 signals. On the 26th November, Ken, 3ANW, operated from Heighton Lookout, 3½ miles s.w. from Geelong and 300 feet a.s.l. and worked 3RR at McCrae with S9 plus signals both ways. A large number of Geelong Hams accompanied Ken and some converts to the band are hoped for. 3AKE, of Geelong, is busy building gear and should be on before this appears. 3AFN, of Black Rock, is another newcomer, using p.p. RL18s and an ASB receiver. He has worked 3DA, 7 miles, with S9 signals and has heard and been heard by 3RR and has probably worked him by now.

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CORRESPONDENCE

The opinions expressed in these letters are the individual opinions of the writer, and do not necessarily coincide with those of the publishers.

THE VK-ZL CONTEST—1949

30 Prospect Ter., Kelvin Grove, W.1, Brisbane

Editor, "A.R.," Sir,

May I use some of "A.R.'s" valuable space to air some of my "beefs" regarding this year's Contest?

Firstly, how come the lack of publicity for the Contest overseas this year? Far too many stations came back and asked how, why and such, that it would certainly appear they didn't even know the Contest was on! I take it then, that F.E. did not give adequate notice to overseas Societies, and those Societies did not therefore have time to publicise our Contest in their local magazines, hence the apparent lack of co-operation from the DX stations.

Secondly, why must we swap such an incredible serial number? It is far too complicated (especially if you have to sit down and pound it into an overseas man who wants to know the rules). Can't we use a simpler system? I suggest we adopt the procedure used by the B.E.R.U. Contest—RST, followd by "001" for the first contact, "002" for the second and so on. Much simpler, much quicker, and certainly not complicated.

Thirdly, why make it a VK-ZL Contest at all? Aren't we big enough now to have our OWN Contest? I'm not kicking the ZLs—but surely we and the ZLs could have separate contests. I would like to see the DX Contest solely an Australian (and W.I.A.) affair.

Fourthly, why wasn't the Prize List announced at the same time as the Rules? F.E. certainly knew the Contest was coming off in October, so why wasn't the list ready in time?

Having got that off my chest, I would like to say a word of thanks to the Contest Committee for changing the time limit rule. The old 48 hours and picking 24 hours of it was too suggestive of an endurance contest. This new version of 24 hours only from "go" to "whoa" is much better, and I somehow think you will get support on this point from most of the fellows.

Though not actually a "beef," I cannot conclude without remarking on the long time it took to get the results of last year's effort in print! Surely a fellow doesn't want to wait for 12 months to find out how he did! After all, the A.R.R.L., "CQ," and B.E.R.U. Tests are promulgated much faster than that, so why not ours?

The subject of the 1949 Contest will most certainly come in for an airing at the next monthly meeting of our Division, and further remarks along my lines will no doubt come to light.

—R. CAMPBELL, VK4RC.

[On behalf of the Contest Manager and Federal Executive, I have been asked to reply to the above letter. Of necessity the answers must be brief, but a full report will be given at the 20th Convention.

1. The Rules this year were not sent out until the 1st August as comments were awaited from the N.Z.A.R.T. of any alterations from the 1948 Contest. Airmail copies were sent to the main Societies and most published them in their October issues. The only other reason for the inactivity or lack of interest by overseas stations can be attr.buted to too many DX Contests at this time of the year.

2. General Business Item of the 18th Convention moved by VK6 and seconded by VK4 recommended the present system of numbering. At present a vote is being taken by the I.A.R.U. on beha f of the W.I.A. for a uniform system of serial exchanges.

3. It is doubtful whether this is the unan.mous view of all VKs and in any case the N.S.W. Division and others urged the re-opening of the pre-war VK-ZL Contests and F.E. was directed in this way.

4. Mr. Campbell apparently doesn't realise that Manufacturers, despite their generosity, have to be approached for prizes and usually take some time to reply. In this case, they were still holding prizes for the 1948 Contest, the results of which had not been advised by the N.Z.A.R.T., and incidentally, the full results are not yet to hand. This latter point is no fault of your Contest Manager, whose repeated efforts to obtain the results has still not borne fruit.—W. MITCHELL, Federal Secretary.]

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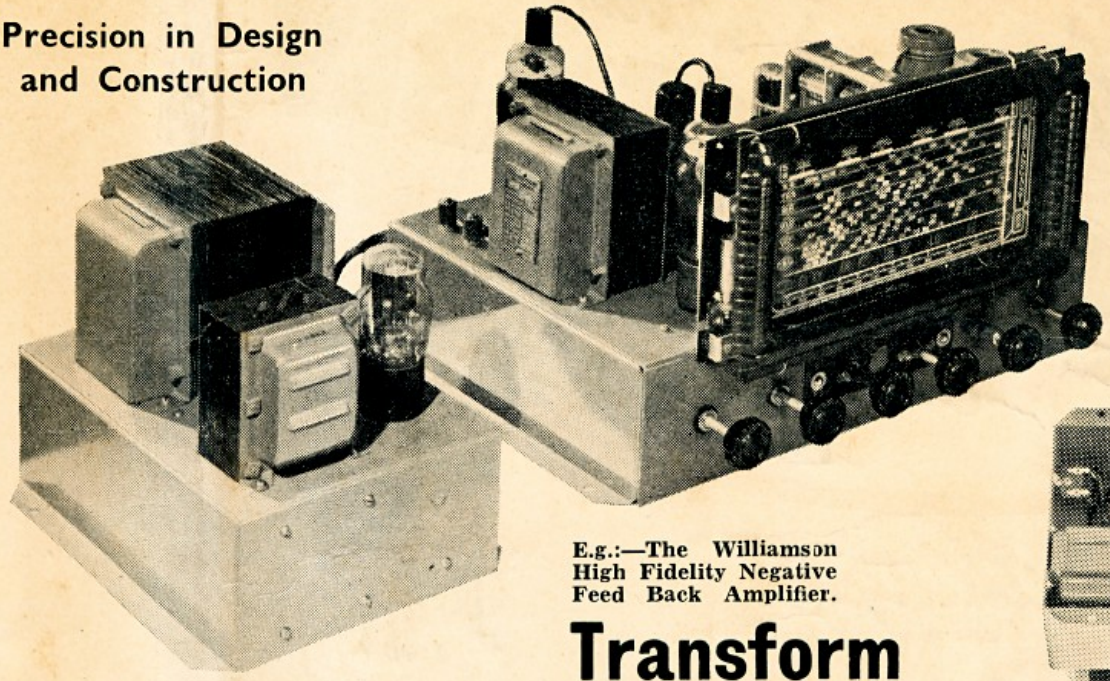

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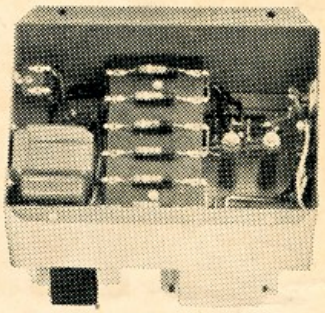

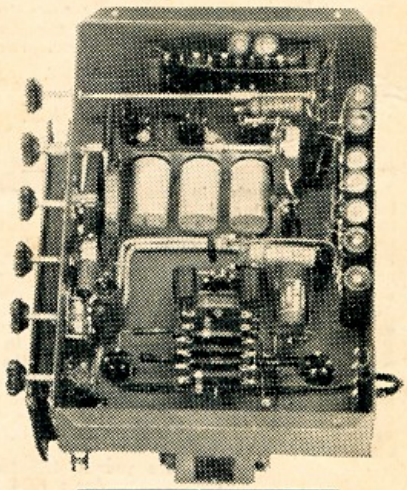

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AEGIS KC4 Four-Band Tuning Unit

The most advanced COIL ASSEMBLY ever offered in AUSTRALIA

Here's something for the EXPERTS

The new Aegis 4-band, bandspread tuning unit illustrated at the right is definitely the answer for the Amateur who desires to build his own communication receiver. Here are the plain facts of this latest Aegis triumph:—

4 Wave Bands		Band-Spread—5 Bands		
550 Kc. —	1500 Kc.	3.5 — 4.0 Mc.	80	Metres
1500 Kc. —	4 Mc.	6.9 — 7.3 Mc.	40	Metres
4 Mc. —	11 Mc.	14.0 — 14.4 Mc.	20	Metres
11 Mc. —	30 Mc.	20.5 — 22.0 Mc.	15	Metres
		27.0 — 30.0 Mc.	10	Metres

Actually constructed in three sub-sections comprising R.F., Converter and Oscillator stages. Finally assembled in one unit, which incorporates Band-Set and Band-Spread Condensers, together with two Slow Motion Drive Assemblies 55/1 and directly calibrated Plastic Dial. Valve Sockets for R.F. (6SK7GT), Mixer (6AC7), and separate Oscillator (6SK7GT) stages are already wired. Concentric air trimmers are used throughout, and the six section "Oak" Type Switch includes shorting banks for all coils not in use. Aerial Trimmer is brought out to front panel with ¼-inch shaft. Screws for iron core adjustment in all coils are readily accessible from top of unit, as are also the Trimmer Screws.

For use with the KC4, we recommend Aegis I.F's. Type Nos. J22 and J23, specifically designed for communication work. A complete set of blueprints for connecting this unit plus a most comprehensive Communications Receiver Circuit are supplied with each Kit.

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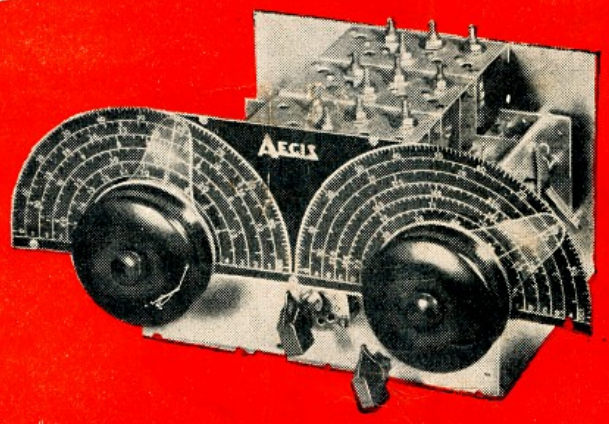

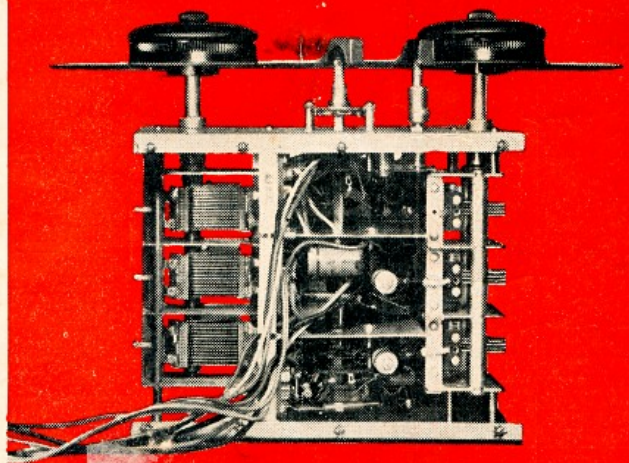

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